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PHYSICAL FITNESS MANUAL FOR THE U. S. NAVY



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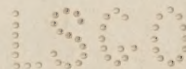
PHYSICAL FITNESS MANUAL FOR THE U. S. NAVY



U. S. BUREAU OF NAVAL PERSONNEL
TRAINING DIVISION
PHYSICAL FITNESS SECTION

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FOREWORD

A primary responsibility of the Bureau of Naval Personnel is the education and training of officers and enlisted personnel of the Navy. An important aspect of this responsibility is the physical fitness of every person in the naval service. This responsibility is discharged through the administration of the Physical Fitness Program which is designed to develop and maintain a superior physical condition among all naval personnel. The method of administering this Program is described in Bureau of Naval Personnel Circular Letter No. 54-43, dated April 13, 1943, subject: Physical Fitness Program of the Navy. Attention is invited to this letter.

The Manual, which is presented herewith, is designed specifically for use in the United States Navy and is based upon conditions existing in the several naval activities. The purposes of the Manual are twofold:

- I. To present the Navy's concept of physical fitness and the methods of securing and maintaining it.
- II. To serve as a guide for those responsible for the physical condition of men in the naval service.

Alertness, the ability to respond quickly and appropriately to varying stimuli and under varying conditions, requires a high level of physical fitness. That is the objective of the Physical Fitness Program and the purpose of this Manual.

Randall Jacobs

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Chapter I

THE NATURE OF NAVAL PHYSICAL FITNESS

A physical fitness program adequate for the Navy's needs must be of broad conception. Tasks of naval personnel involve long periods of standing; climbing up, down, and diagonally in close quarters; running, swimming, throwing, balancing, and moving quickly from place to place; carrying heavy weights; and enduring strain under sustained effort in a variety of situations. The individual's mastery of swimming as a means of preserving his life is a matter demanding most important consideration. Because of the exhausting nature of his duties, the bluejacket also must be taught how to use rest periods to the greatest advantage.

OBJECTIVES OF PHYSICAL FITNESS

To attain desired physical fitness it is necessary for naval personnel to have:

1. *Freedom from disease and handicapping defects.*—The discovery and treatment of disease and of handicapping defects are functions of the medical department.

2. Enough *strength* to be ready for the heaviest tasks that may be encountered in routine and emergencies. Strength is developed in muscles when their power of contracting is challenged by maximum loads. The following activities primarily develop strength: Strenuous conditioning exercises, heavy gymnastics, weight lifting, wrestling, boxing, and running.

3. Enough *muscular endurance* to be able to continue strenuous work tasks without undue fatigue. A strong muscle carries a load for a longer time without tiring than does a weak one. Endurance of this nature is best called *local* or *muscular endurance*. It operates whenever the muscle is considerably stronger than it needs to be for the load demanded of it. Consequently, parts of the muscle contract while other parts are resting. The various exercises for the develop-

ment of muscular endurance are very similar to those indicated under "strength" but, however, they must be carried to the limit of staying power.

4. Enough *cardio-respiratory endurance* for long-sustained effort in activities involving motion of the entire body. This endurance is based primarily on training that produces changes in the heart, lungs, and circulation. Prolonged exertion, such as in distance running, swimming, and competitive games, extends a man's endurance provided he forces himself often to exercise to his limit.

5. Enough *agility* to be able to maneuver one's body quickly and effectively. Agility involves varying degrees of bodily coordination. It is best developed by calisthenics which require extensive and rapid changes of position, by tumbling, by games requiring dodging and change of pace, and by combative activities and sports.

6. Enough *flexibility* to be able to make wide ranges of movement easily. A flexible body is supple and pliable and possesses balance. Flexibility is most easily developed by especially devised calisthenic exercises which repeatedly stretch the muscle groups concerned.

7. Enough *speed* to be able to move rapidly to and from assigned stations. Speed is best developed by the practice of good form in exercise, especially in running.

The practice of physical training activities develops in men certain qualities other than those mentioned above. The increase in strength and endurance along with the improvement of military posture, tends to be reflected in greater self-confidence and self-respect. Skills developed through the continued practice of combative sports and athletic games tend to be associated with the ability to respond quickly to changing combat situations; with poise and alertness; with aggressiveness, initiative, and resourcefulness; with team-

work; and with improved individual and group morale. Hence, it is important, where conditions permit, to utilize such athletic sports and games to the utmost. They should be so organized that they will be available to all personnel in training.

ACTIVITIES INCLUDED IN THE PHYSICAL FITNESS PROGRAM

To develop the physical qualities needed for the Navy, the physical fitness program includes the following types of activities:

Posture training.	Relay exercises.
Physical fitness tests.	Tumbling.
Swimming and lifesaving.	Apparatus exercises.
Calisthenics.	Alertness exercises.
Running.	Group games.
Jog marching.	Relays.
Obstacle course running.	Athletic sports.
Boxing.	Rope climbing.
Wrestling.	Rope skipping.
Combatives.	Medicine ball exercises.
	Weight lifting.
	Bag punching.

These activities all have body-building value and lend themselves readily to a mass exercise program.

HOW REGULAR AND SELECTED EXERCISE CONTRIBUTES TO PHYSICAL FITNESS

It must be understood that beneficial effects of exercise are produced only when activities of the right type and amount are used. Too little exercise fails to produce the necessary physical reserve to perform tasks efficiently and resist fatigue; too much exercise produces the harmful results of muscular soreness and the irritability which comes with staleness. The proper balance of exercise is the goal of a well-planned conditioning program.

In the conditioned man, as contrasted with one who is unconditioned:

1. The heart and blood vessels operate more efficiently. The heart is able to pump more blood per stroke, thus doing more work with less effort. The heart beats fewer times per minute and, after hard work, returns more rapidly to normal speed. There is an increase in the number of capillaries, which means a corresponding increase in the circulation of the blood to the muscle cells. With such an improvement in circulation, the muscular system receives a better fuel

supply and at the same time is better able to eliminate fatigue products.

2. The respiratory system functions more efficiently. Fewer inhalations per minute are needed. Release of carbon dioxide and oxygenation of the blood take place more rapidly and more completely. Vital capacity is increased.

3. The muscular system increases in size and power, and the man becomes more skillful. Muscular capacity for work is increased. When the muscular system is operated with a high degree of skill, greater endurance is assured because fewer muscles are called into play to do the task. The skilled muscle uses a minimal amount of energy in doing the job.

4. The nervous system is trained to coordinate the other body systems more effectively. Proper exercise increases the man's zest and enthusiasm, and helps to make him more sociable and cooperative. Mental health is improved when a man is in good physical condition and takes part in activities which completely absorb his attention. Change of activity is an important re-creating factor.

5. There is an increase in the ability of the body to resist fatigue and also to recover from fatigue.

ATTAINING AND MAINTAINING PHYSICAL FITNESS

Any physical fitness program should begin with a moderate amount of exercise and increase gradually but steadily in terms of the rate of the progress of the man. With well-selected activities, participated in for an hour a day, the average man can be put into good physical condition in from 8 to 12 weeks. In the first week of training men should not be given so much activity that they suffer from marked muscular soreness or exhaustion. As men start their training, emphasis should be placed upon mastering good form in executing the exercises. Gradually, as they demonstrate greater capacity, the work-load should be steadily increased and the rest periods between activities reduced.

It has been shown that if a man is to improve his physical fitness speedily, he must take an amount of exercise approaching the limit of his present ability, and he must train for tasks of greater severity than those with which he will

normally be faced. This means an increase in either the cadence or the load borne, or in both. It means that a man must progressively run faster, must lift or carry heavier loads, or speed up the tempo of the exercises. Physiologists term this the "overload principle." It is to be remembered that in early stages of training a moderate exercise program is usually enough to "overload" the then existing performance ability.

By the end of the 8th to the 12th week the men in training should have approached a desirable condition of physical fitness. From this time on there should be put into effect what is called a

physical fitness maintenance program. The maintenance program includes that amount of exercise necessary to preserve the level of physical fitness attained during the basic 8 to 12 weeks of training. In this program careful attention must be given to adapting the content to the varying needs and conditions found at different naval activities. Major emphasis should be placed on an all-round developmental program of physical training, including whenever possible, games and sports of such a nature as to be of genuine interest to men.

Chapter II

PLANNING AND CONDUCTING THE PHYSICAL FITNESS PROGRAM

The Physical Fitness Program of the United States Navy consists of two major parts, (a) the *Physical Fitness Training Program* and (b) the *Physical Fitness Maintenance Program*. The *training* program is a scheduled part of the standard naval training curricula for Recruit Training, Service Schools, and Indoctrination Schools and is designed to develop in men a high level of physical fitness. The *maintenance* program is designed primarily to keep men at a high level of physical fitness once that level is attained. This program is used in the Fleet, Section Bases, and at other nontraining naval activities.

The material in this chapter is concerned with the administration of the two types of programs mentioned above. It is assumed, of course, that program needs will vary with different naval activities. The Manual, therefore, while offering basic physical training and maintenance programs for general use, also contains considerable additional program content from which selection can be made to fit particular situations.

PLANNING THE PROGRAM

Planning is essential if an effective program is to be realized. It should involve (a) a *long range program* covering a given training or maintenance period, and (b) a *daily program*. Long range planning has as its purpose the assurance of a well-balanced program in which consideration must be given to climatic conditions, available facilities and equipment, staff personnel, and the time available for physical fitness activities.

Plans should be laid for each day's program which, in most naval activities, involves an early morning session and a longer period sometime later in the day.

Early Morning Program.—This period varies from 20 to 30 minutes in length. The men should not begin very vigorous running or calisthenics immediately upon arising. Marching and easy jog-running should be used in proceeding to and from the exercise area. If the activity is carried on near the barracks, the recommended three calisthenic warm-up exercises should be administered for a longer period than if the men have marched or jogged for some distance.

Whether or not Warm-up Calisthenics are used, the seven Early Morning Calisthenic exercises should be given and the balance of the program varied from day to day to include various forms of running, marching, additional calisthenics, and some of the relay exercises done in circle formation. (See ch. XII.)

Program of the Day.—At some time during each day there should be, in addition to the early morning period, *1 hour of physical training*. Where possible, swimming should be taught for three of these periods per week for all nonswimmers or poor swimmers, and should be given once a week for those who swim well.

Men should begin their exercise with Warm-up Calisthenics. Following this warm-up, selections should be made from General Calisthenics and Supplementary Exercises. The remainder of the time can then be given to two or three of the following activities each day: running, alertness exercises (see p. 132), tumbling, boxing, wrestling, swimming, rope skipping, medicine ball throwing, weight lifting, combatives, games, relays, athletic sports, and apparatus.

Some sample daily programs are offered. These do not represent programs for five consecutive days. Rather, they represent combinations of activities that might comprise a single day's

program together with the proportionate amount of time to be allotted to each separate activity.

SAMPLE DAILY PROGRAMS

SUGGESTED PROGRAM NUMBER ONE:	Minutes
General Calisthenics.....	10
Combatives.....	15
Games.....	20
Running for 1 mile.....	10
SUGGESTED PROGRAM NUMBER TWO:	
Warm-up Calisthenics.....	5
Alertness Exercises.....	10
Wrestling.....	10
Games.....	10
Track.....	20
SUGGESTED PROGRAM NUMBER THREE:	
General Calisthenics.....	15
Tumbling.....	15
Relays.....	15
Obstacle Course.....	10
SUGGESTED PROGRAM NUMBER FOUR:	
Road Work.....	10
Boxing.....	10
Tug of War.....	5
Games and Sports.....	30
SUGGESTED PROGRAM NUMBER FIVE:	
General Calisthenics.....	20
Relay Exercises.....	10
Combatives.....	15
Jog Marching.....	5

In case equipment for rope skipping, medicine ball throwing, weight lifting, or apparatus is available these activities may be substituted from time to time for some of those listed above.

CONDUCTING THE PROGRAM

In this section are discussed some of the practical administrative aids for conducting an efficient program. They are points which should be always kept in mind by the instructor.

1. **Promptness.**—It is essential to begin and end activity periods on time. Failure in this respect not only causes a loss of valuable time but also of respect for the program.

2. **Discipline.**—Good discipline must be maintained at all times.

3. **Athletic Uniforms.**—The athletic uniform of the day shall be consistent with weather conditions and the activity in which the men are to participate. At all times athletic uniforms must be clean. A brief inspection of uniform sanitation should be held once weekly.

4. **Leaders.**—When only one instructor is assigned to a platoon or large group of men, assistant instructors from the group itself should be used as leaders. These leaders should be used

to instruct squads or other small groups, to aid in testing, scoring, and handling athletic gear. They should be given special instruction in the duties which will be assigned to them.

5. **Care of Athletic Gear.**—Care of athletic gear is important and this duty should be assigned to responsible staff members or assistants. Instructors should be certain that adequate athletic gear is available at the time and place needed.

6. **Choice of Activities.**—Insofar as possible the activities should be related to the preparation of men for their future duties at sea, remembering that these duties require long periods of standing, climbing up and down and diagonally in close quarters, lifting, running, throwing, balancing, swimming, and moving quickly from place to place. On appropriate occasions men should be reminded that the exercises they are performing are closely identified with their future duties.

7. **Amount of Exercise.**—The intensity of activities should be adapted to the condition of the men. At the beginning of training, men should receive relatively light workouts. The amount of work should be increased as the men develop greater endurance.

8. **Emphasis on Swimming and Rope Climbing.**—Because of their practical utility in meeting emergency combat situations, where lives are at stake, these two activities should receive special emphasis in the physical training program.

9. **Brief Explanations.**—The instructor should make his explanations as brief as possible. The activity periods are already limited in time and therefore they should be used to keep the men active rather than to permit considerable inactivity.

10. **Acquaintance of Men with Program.**—During the early part of training (when short rest periods are more frequent than in the latter part of training) instructors should give short talks on the nature of the physical fitness program of the Navy in order to acquaint men with the results to be expected. These talks need not be over 2 or 3 minutes in length and should not involve more than one idea at a time. Following are suggested subjects for such talks: (a) Overall description of the Physical Fitness Program of the United States Navy; (b) specific purposes of various types of physical fitness activities; (c) health, strength, and endurance values of the program;

1ST REGIMENT PHYSICAL CONDITIONING DEPARTMENT PROGRESS RECORD																																					
COMPANY																																					
COND. EX. & RELAYS																																					
MASS GAMES & CONTESTS																																					
OBSTACLE COURSE																																					
BOXING																																					
WRESTLING & JUDO																																					
PHYSICAL FITNESS TEST																																					
SWIMMING TEST																																					
ADVANCED SWIMMING																																					
N.Q.S.																																					

FIGURE 1.—Illustration of bulletin board chart.

(*d*) the value of excellent physical condition for service under combat conditions; (*e*) the value of good posture with emphasis on appearing well in the uniform; (*f*) the purposes to be achieved by the testing program; (*g*) the values of voluntary participation in sports and games.

11. Avoidance of Idleness.—Men should be kept busy during the physical training period. The activities should be so selected and organized that practically all the men are participating at the same time, instead of having many men standing around while only a few are exercising.

12. Position of Instructor.—For new exercises it is advisable for the instructor to stand in front of the men, on a raised platform if possible, and actually perform the exercises, thus setting a pattern for them. Later on he should select assistants for this purpose thus freeing himself to move about, making suggestions and correcting positions as there is need.

13. Use of Loud Speaker.—It is recommended that where large groups of men are assembled for exercises or activities, a loud speaker be used. Best results are attained when the instructor does the announcing and has assistants do the demonstrating.

14. Safety.—Instructors should do everything possible to prevent accidents and injuries. This

entails a constant checking on equipment and exercise areas. All injuries should be reported at once in accordance with regulations.

15. Testing.—This aspect of the program involves use of the Navy Physical Fitness, Swimming, and Posture Tests. They are used for three main purposes: (*a*) To determine the physical fitness and swimming abilities of men when they arrive for training and subsequently to classify them for future training; (*b*) to stimulate men by letting them know their physical fitness status and the progress they are making; (*c*) to measure the program selected for the physical conditioning of large groups of men.

16. Competition.—The various physical fitness activities should be conducted on a competition basis when possible. Some of the commonly used methods of schedule making and running of meets and tournaments are explained at the conclusion of this chapter.

17. Records.—A record should be kept of the various performances and scores of individuals, platoons, companies, and regiments.

18. Bulletin Boards.—These are important in all physical fitness programs. Outstanding records made by men, physical fitness scores, results of team competition, team standings, news clippings on physical fitness, and illustrated materials

should be posted. Bulletin boards should be located in conspicuous and well-lighted areas. Improvements in the physical condition of each platoon or company as measured by the Navy Standard Physical Fitness Test should be publicized in this way (fig. 1).

19. **Visual Aids.**—Use should be made of all available charts, diagrams, training films, slides, or other visual aids.

20. **Use of Civilian Facilities.**—Where naval facilities are not adequate it is often possible to supplement them by cooperative arrangements with civilian agencies. In this way swimming pools and gymnasiums may be available at times when Navy men may use them. In all such cases, however, arrangements should be made through the commanding officer.

THE INSTRUCTOR

Upon the instructor depends to a large degree, the success of the physical fitness program. Certain traits have come to be recognized as essential for well-qualified leadership. Among these are:

1. **Acquaintance with Materials.**—The instructor must know his job. He should have complete mastery of the subject matter and be able to explain and demonstrate all activities.

2. **Personal Appearance.**—Judgment of the work of an instructor often is influenced considerably by his personal appearance. He should be exemplary of good physical fitness, posture, dress, alertness, and hygiene habits.

3. **Military Manner.**—All programs should be conducted in a military manner in giving instruction, commands, and leading exercises. An attitude of friendliness can be fostered with the men without developing undue familiarity with them.

4. **Forceful Commands.**—In giving commands or describing activities and procedures, the voice must be distinct and loud enough to be heard by all the men, and also carry assurance and decisiveness. A good commanding voice also requires proper breathing, a relaxed throat, mouth well open, keeping the voice low, and maintaining good posture.

5. **Enthusiasm and Interest.**—Unless the instructor is interested in his work he is not likely to do a good job. Enthusiasm is "catching." To a large degree the men will respond in carrying out their part of the program in proportion

to the interest and enthusiasm shown by the instructor.

COMPETITION SCHEDULES

At times during the physical training program it will be desirable to have schedules arranged for games, sports, and other competitive activities which involve matches between individuals or selected teams. Such competition will stimulate interest and also serve as a means of obtaining more of an "all-out" effort on the part of the men themselves. Because of inactivity of many teams and consequent loss of interest it is preferable to have schedules arranged so that final winners are decided in a relatively short time rather than having the competition extend over a long period. Therefore, several small groups or leagues, each with not more than 8 or 10 teams, are recommended with final play-offs between group or league winners if necessary.

There are several kinds of schedules or elimination plans that may be used and brief descriptions of the more common ones are presented.

1. **Round Robin.**—In this type of schedule each individual or team meets every other one at least once. The plan has the advantage of allowing defeated men or teams to continue in play. The number of contests to be played in such a schedule can be determined by multiplying half the number of teams by one less than the number of teams. (Example: With 10 teams there would be 5×9 or 45 games.) This information will indicate to the instructor the amount of time and play that will be involved. Winners are determined on a percentage basis. Examples of 6-, 7-, and 10-team schedules follow. Byes occur only when there is an uneven number of teams.

6-TEAM SCHEDULE

1-2	1-4	1-6	1-5	1-3
3-4	2-6	4-5	6-3	5-2
5-6	3-5	2-3	4-2	6-4

7-TEAM SCHEDULE

1-2	1-4	1-6	1-B	1-7	1-5	1-3
3-4	2-6	4-B	6-7	B-5	7-3	5-2
5-6	3-B	2-7	4-5	6-3	B-2	7-4
7-Bye	5-7	3-5	2-3	4-2	6-4	B-6

10-TEAM SCHEDULE

1-2	1-4	1-6	1-8	1-10
3-4	2-6	4-8	6-10	8-9
5-6	3-8	2-10	4-9	6-7
7-8	5-10	3-9	2-7	4-5
9-10	7-9	5-7	3-5	2-3

1-9	1-7	1-5	1-3
1-7	9-5	7-3	5-2
8-5	10-3	9-2	7-4
6-3	8-2	10-4	9-6
4-2	6-4	8-6	10-8

2. **Single Elimination Tournament.**—Individuals or teams draw for positions in the bracket or are arranged in pairs. Winners advance into the next round of play and losers are eliminated. The finals are between the last two winners. There are no byes when the number of men or teams is a power of two (4-8-16, etc.) and the schedule works out as shown in figure 2. When the number of teams is not a power of two there will be byes in the first round of play and they should be divided between the top and bottom of the bracket. The number of first-round games in such a case is the difference between the number of teams and the next lower power of two. (Example: With 10 teams the number of first-round games will be 10-8 or 2 games.) This schedule is shown in figure 3. The number of contests in a single elimination tournament is one less than the number of individuals or teams.

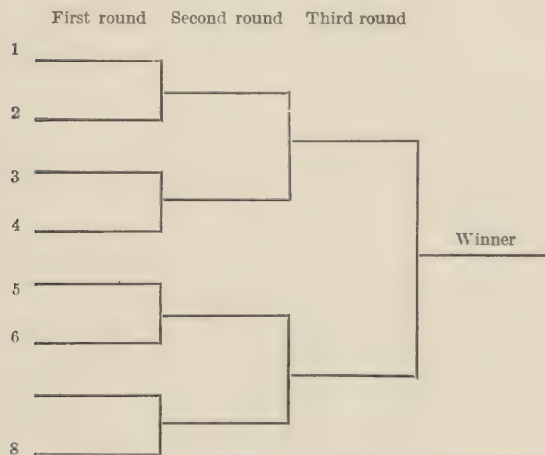


FIGURE 2.—Single elimination tournament (no byes).

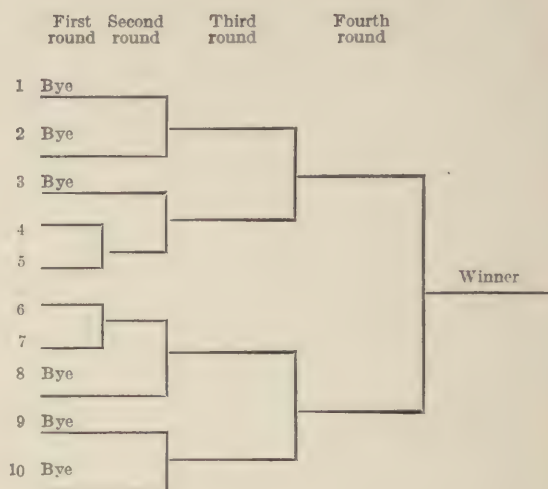


FIGURE 3.—Single elimination tournament (with byes).

NOTE.—A double elimination tournament schedule is not discussed or illustrated here because, with small numbers of teams recommended for groups or leagues, it is generally preferable to use a round robin schedule. A double elimination tournament schedule is similar to that for a consolation tournament described next, except that a team must lose twice before it is eliminated.

3. **Consolation Elimination Tournament.**—In this type of tournament schedule the positions of individuals or teams in the bracket are determined in the regular way. Winners proceed to the right and losers to the left after the first round of play as shown in figure 4. Each team plays at least twice. Losers, however, do not have a second chance for the championship.

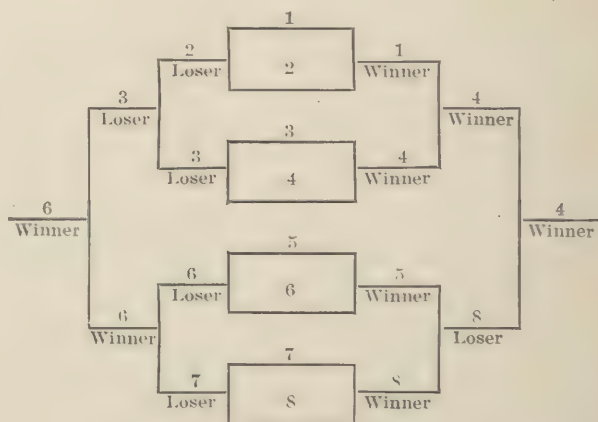


FIGURE 4.—Consolation elimination tournament.

4. **Ladder Tournament.**—A ladder tournament schedule is most adaptable to competition in individual events. Names of contestants are posted in a column one below the other (fig. 5). A man may challenge one of the two contestants above him, and if he defeats him, they change places in the list. Challenges must be accepted within a specified time or they are considered as forfeits. A ladder should not include more than 8 or 10 names. Final play-offs can be arranged between winners of each ladder if desired.

5. **Pyramid Tournament.**—This is similar to the ladder tournament except, with the one man at the top, there are two in the second row, three in the third, four in the fourth, and so on (fig. 6). Any man may challenge any other player in the row above him, and if he defeats him, they change

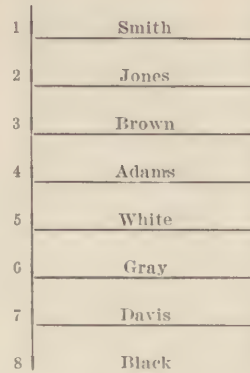


FIGURE 5.—Ladder tournament.

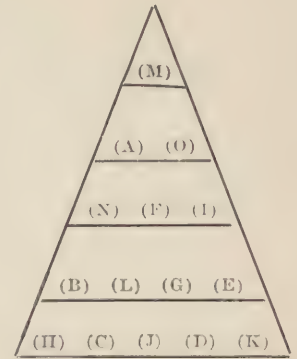
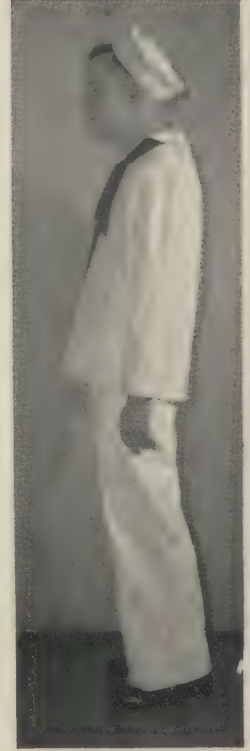
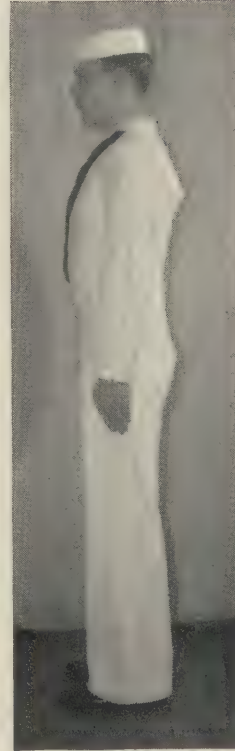


FIGURE 6.—Pyramid tournament.

places. This plan is most desirable for individual competition.

Chapter III

POSTURE



The erect man.

FIGURE 1.

The slouched man.

The Navy is often judged by the appearance of its officer and enlisted personnel. Good posture suggests military bearing.

Examples of both good posture and poor posture are shown in the illustrations in this chapter. Front and side views are presented.

The popular characteristics of good military bearing are head up, chin in, elevated chest, shoulders back naturally, abdomen flat, arms hanging relaxed with fingers touching legs at sides. This posture is maintained both in standing and in walking, except that in walking the arms have a free, easy swing.

The erect man.

FIGURE 2.

The slouched man.

The relation of good posture to the military position of Attention is described and illustrated in the *Bluejackets' Manual*, page 41.

The most frequently noticed violations of good military posture are (1) the deep sway back with extreme forward tilt of the pelvis, (2) depressed chest, (3) drooping shoulders with arms forward, (4) extremely rounded upper back, (5) forward tilt of the head and neck, and (6) ordinary slouch. When poor posture becomes chronic, the vital organs of the chest and the abdomen and related structures frequently change their normal relationship in such a way as to reduce their efficiency.

These changes are explained more fully in a pamphlet "Suggestions for the Improvement of Posture for Naval Personnel" obtainable from the Physical Training Section, Training Division, Bureau of Naval Personnel.

SUGGESTED PROCEDURES FOR IMPROVEMENT OF POSTURE

Poor posture very frequently results from lack of awareness of posture, ignorance of good posture and how to achieve it, and indifference. In order to stimulate naval personnel to an improve-

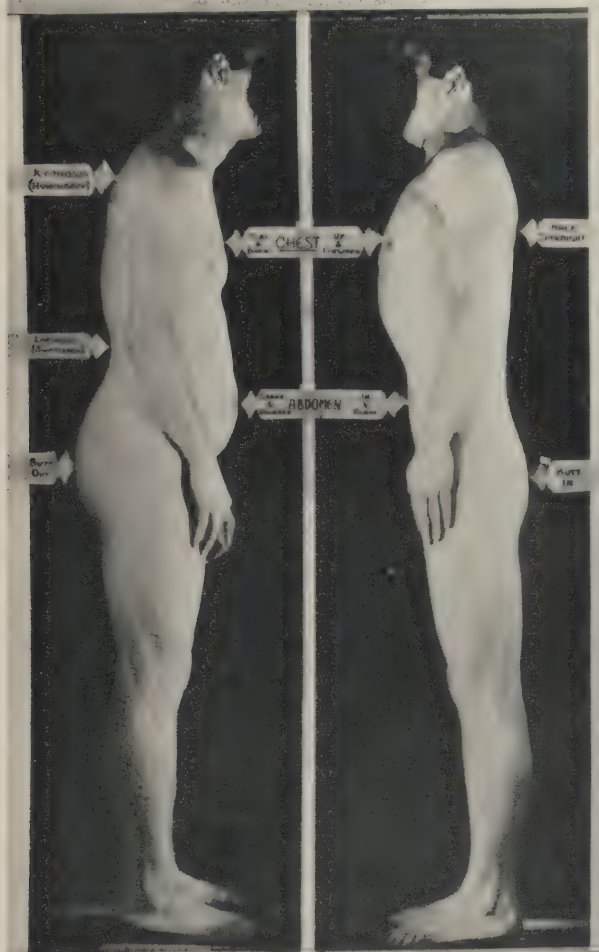
ment in posture, the following program is suggested:

1. Appropriate use should be made of visual posture material, such as charts, pictures, posters, and motion pictures.

2. Short and frequent lecture-demonstrations should be provided for men during training. These lectures should emphasize the possible ill-effects of poor posture both on the vital organs and the man's appearance.

3. Men with poor posture must be reminded of this shortcoming frequently and given individ-

FORWARD HEAD STRAIGHT HEAD
ABOVE CHEST ABOVE CHEST



WHICH ARE YOU?

DEBUTANTE SLOUCH GOOD POSTURE



GOT IT? GET IT!

FIGURE 3.—Illustrations of poor and good posture.

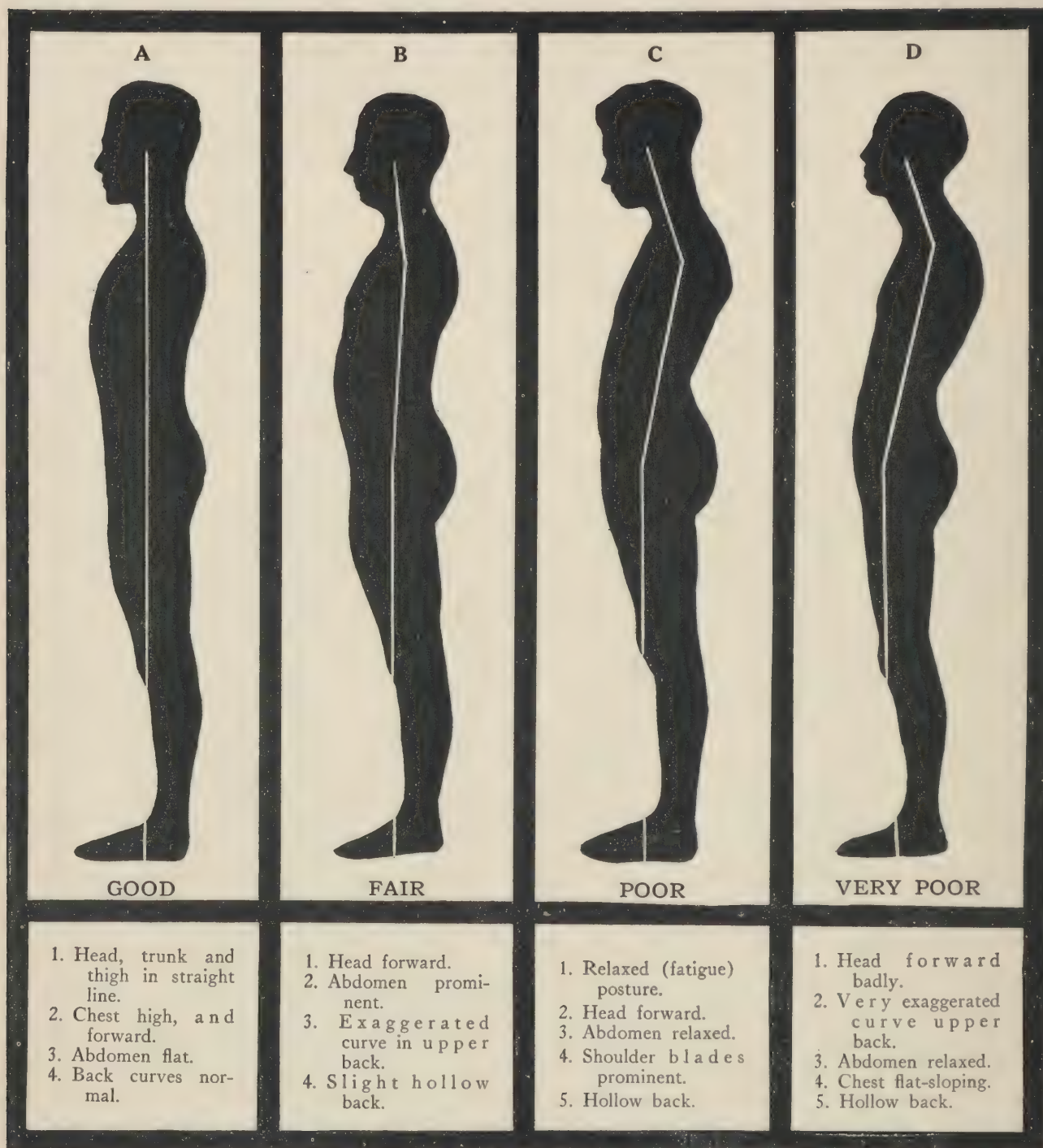


FIGURE 4.—Posture chart.

ualized instruction in posture improvement by chief specialists, drill instructors, and other qualified personnel. Complimenting men for good posture encourages them, while occasionally remind-

ing those with habitually poor posture may bring about improvement.

4. Since close and continuous supervision of posture is impossible, the man himself must be

responsible in a large measure for his continuous proper military bearing. An appeal can be made to the man's pride in his appearance, indicating to him at the same time that, whether on or off duty, he represents the United States Navy. Moreover, the man should be made to realize that his appearance is an important factor in recommendation for promotion. Good posture indicates good health; it suggests self-respect and leadership.

5. Posture training should begin with instruction in the essentials of good military posture. Practical exercises should be prescribed so that skill will be developed in those muscles controlling posture. Each man should practice mastery of specific posture exercises described later in this chapter.

6. Measurement of posture is important. It reveals progress and at the same time stimulates the man tested by showing him his improvement. Periodically, he should be given a rating or grade by comparing his posture with the various standards of posture shown in figure 4. The letter grade of A, B, C, or D is given him according to the picture he most closely resembles. The plus sign can be added to a lower letter grade when a man's posture seems to fall between two of the standards.

SPECIFIC EXERCISES FOR POSTURE CONTROL AND IMPROVEMENT

There are certain characteristics on which emphasis must be centered if good military posture is to be maintained. These characteristics are (1) a retraction of the lower abdomen, (2) an elevation of the chest, and (3) a decrease of the pelvic tilt. These are applicable to one's posture in standing, walking, and sitting. There are additional important characteristics in posture control as indicated in figures 5 and 6 and their accompanying explanations; yet the three factors just mentioned are of the greatest importance.

To master these three factors, one must develop postural skills in the muscles controlling the chest, abdomen, and pelvis. It is well to begin with simple exercises which involve controlled retraction of the lower abdomen, voluntary rounding forward of the upper abdomen, elevation of the chest, and control of the pelvic tilt. The following six exercises are specifically selected for the improvement of posture. Throughout these exercises, constant attention must be paid to three

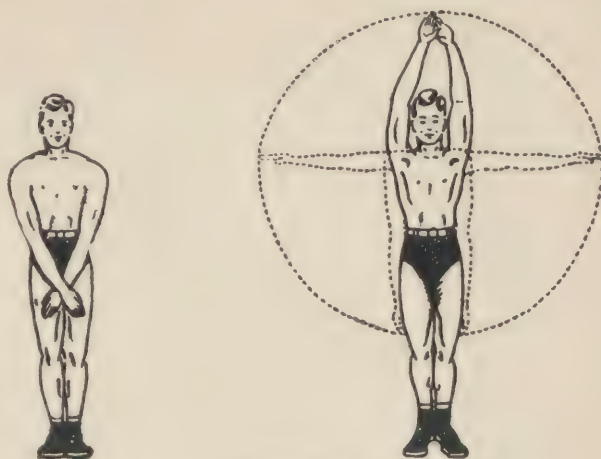


FIGURE 1.

EXERCISE I.

FIGURE 2.

(Deep Breathing) 6 Times

Arms rise from attention to cross each other in front of body (as in fig. 1) and up over head back in circular motion, and down to the sides. Rise on toes as arms go up and inhale (as in fig. 2).

Count 1—Arms start up.

Count 2—Circle and come down to sides.

Count 3—Exhale.

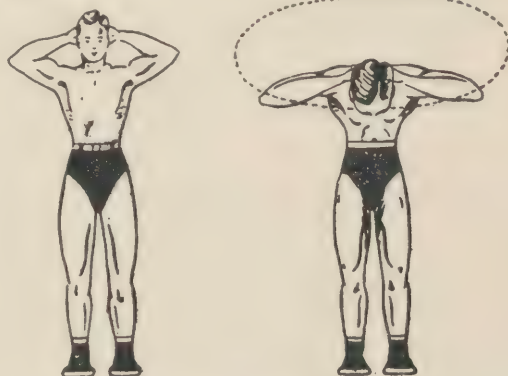


FIGURE 1.

EXERCISE II.

FIGURE 2.

(Abdominal)

Start with 10 times each way and work up.

Position of attention—heels about 5 inches apart.

Count 1—Place hands clasped behind head (as in fig. 1). With position go to the left in a circular outward, downward, side-ward, and then upward motion.

Count is:

1—Upper body bends from diaphragm to left.

2—Body moves across in a horizontal plane from left to right.

3—Return upward to start.

Bend at diaphragm—not the hips—and suck up your stomach when doing. The shoulder muscles are relaxed. Do 20 times from left to right, then reverse for 20.

aspects of military posture control described in the previous paragraph. An additional list of ten posture exercises is also included. It should be kept in mind that other exercises listed under Calisthenics and Supplementary Exercises also have definite posture values.



FIGURE 1.



FIGURE 2.

EXERCISE III

(Abdominal) 30 Times

Hands extended overhead (as in fig. 1) and arms stiff are brought down to touch legs above knees, chin touching collarbone (as in fig. 2). Suck up the abdominal muscles as the arms come down.

Count 1—Arms up and inhale.

Count 2—Arms down and suck up the stomach and exhale.



FIGURE 1.



FIGURE 2.

EXERCISE V.

(Abdominal) 20 Times Each Side

At the command "Position" extend arms sidewise from the body at shoulder level; drop the right hand 10 inches and raise the left hand 10 inches (as in fig. 1); suck up stomach and lock hips.

Count 1—Reach right hand behind and down; left hand swings forward and up, keeping stiff straight line between hands. Pivot from the diaphragm. Eyes and head follow hand back and down.

Count 2—The position is reversed (as in fig. 2). Keep hips locked, stomach sucked up.



FIGURE 1.



FIGURE 2.



FIGURE 3.

EXERCISE IV.

(Deep Breathing) 6 Times

From attention the arms go out and up to a position behind head (as in figs. 1 and 2), clasp hands and as arms are moved forward over the head, twist the hands, palms out still clasped and then down to sides (as in fig. 3).

Count 1—Raise arms up and clasp back of head; inhale from beginning of exercise until hands clasp.

Count 2—Arms move forward and down; exhale only when exercise is complete and arms at attention position.



FIGURE 1.



FIGURE 2.

EXERCISE VI.

(Deep Breathing) 6 Times

Inhale—Arms rise to position straight out in front of body (as in fig. 1); from here close fists and pull backward, elbows close to sides of body, very swiftly and hard (as in fig. 2).

Count 1—Arms out in front, inhale to full capacity.

Counts 2, 3, 4, 5, 6—The fists are vigorously pulled back to shoulder and thrust forward on each count while breath is held.

Count 7—Arms at attention and exhale. A few seconds respite is recommended before repeating exercise.

OBSERVABLE CHARACTERISTICS OF POOR MILITARY POSTURE (FIG. 5)

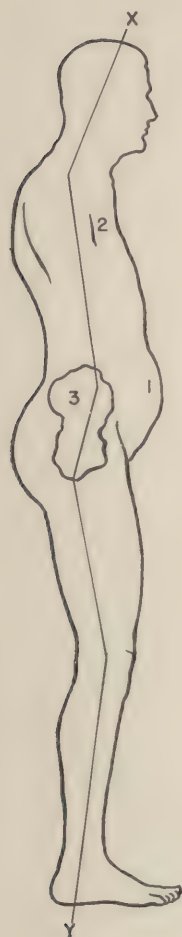


FIGURE 5.—Left—observable characteristics of poor military posture (viewed in lateral plane).

1. Long axis of head and neck tilted forward instead of vertically. Center of head-weight forward. Chin forward to front line of sternum ("breast-bone").

2. Chest (thorax) is depressed and suggests muscular weakness. Sternum should be foremost part of front surface of body.

3. Curve of upper back is exaggerated and gives the appearance of "slouch" or "stoop."

4. Center of upper arm opposite front of chest. Shoulders are forward.

5. Diaphragm is relatively horizontal.

6. Upper abdomen depressed, forcing visceral organs to sag deeper into abdominal cavity.

7. Lower abdomen protrudes. Indicates poor muscular control and muscular weakness.

8. "Small" of back (lumbar area) has deep curve. Appearance is one of "hollow-back."

9. Pelvic tilt is increased.

10. Buttocks protrude as a result of increased pelvic tilt.

11. Knees are slightly flexed, adding to the total impression of a slouched posture.

12. Long axis of body, x-y, shows malalignment of the related segments, throwing additional strain on supporting muscles.

13. General appearance is one reflecting fatigue, carelessness, and slouchiness.

OBSERVABLE CHARACTERISTICS OF GOOD MILITARY POSTURE (FIG. 6)

1. Long axis of head is approximately vertical. Head-weight is centered. Chin is back of the foremost part of the front chest line.

2. Chest is elevated and yet gives the appearance of relaxation (not "thrown out"). Foremost part of the entire body is the "breast-bone" (sternum). Chest is convex forward.

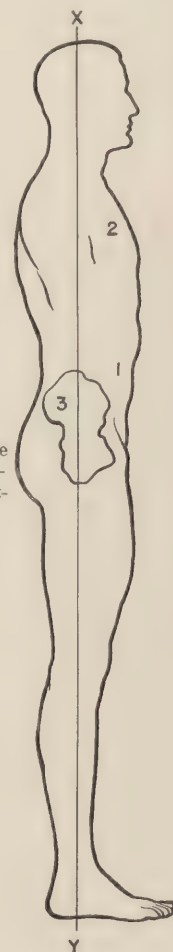


FIGURE 6.—Right—observable characteristics of good military posture (viewed in lateral plane).

3. Shoulders are backward and downward, but relaxed and do not give the appearance of being stooped.

4. Center of upper-arm is approximately one-third the distance from back to front of the chest depth.

5. Diaphragm is arched.

6. Upper abdominal area curves outward and is moderately relaxed. This permits desirable position of visceral organs (liver, stomach, kidneys, intestines, etc.).

7. Lower abdomen is retracted, forming a nearly vertical line. This prevents "sagging of vital organs."

8. "Small" of back (lumbar area) is curved slightly inward. There is an absence of "hollow-back".

9. Tilt of pelvis is decreased.

10. Buttocks are rounded but do not protrude unduly as they would with an abnormal tilt of pelvis.

11. Knees are relatively straight but do not give the appearance of tension.

12. Long axis of body is relatively straight and related parts are in alignment.

13. General appearance is one reflecting strength, control, and vitality.

ADDITIONAL EXERCISES FOR STRENGTHENING UPPER BACK AND SHOULDER MUSCLES ASSOCIATED WITH POSTURE

The following 10 exercises are designed as suggestions for men who wish to put additional time and work on the improvement of their posture.

1. Starting position: Attention. **Movement:** (1) Performer swings arms forward and upward to full stretch vertically, and at the same time rises high on toes. (2) Performer swings arms sideward and downward, and presses them back hard, and at the same time retracts the chin and lets heels drop to the deck, but avoids an exaggerated arch in lower back.

2. Starting position: Trunk leaning forward about 60°, arms hanging downward loosely from shoulders. **Movement:** Performer swings arms sideward and backward vigorously, retracting chin forcefully and flattening upper back. He holds this position momentarily.

3. Starting position: Lying face down on the deck, elbows at sides, and fingertips on shoulders.

Movement: Performer rotates arms outward, and pulls elbows in hard to sides, at the same time pulling in chin and lifting head about 6 inches from the deck. He holds this position a full second and then relaxes.

4. Starting position: Kneeling on the deck, trunk bent sharply forward, hands behind head.

Movement: Performer straightens upper back while still leaning forward, presses elbows and head backward, while pulling in chin.

5. Starting position: Seated on the deck, knees raised, and trunk bent forward, and arms stretched forward. **Movement:** Still leaning forward performer swings arms upward and backward, at the same time pulling in chin.

6. Starting position: Standing, fingertips touching shoulders, arms in front of chest, and elbows downward. **Movement:** Performer moves upper arms outward and backward, with elbows hugging sides. He holds the position a full second while trying to force arms farther around and back. At the same time he retracts head and attempts to stretch upward.

7. Starting position: Bending forward about 45°, elbows sideward, horizontal from shoulders, forearms bent forward, palms down, thumbs just in front of shoulders. **Movement:** Performer straightens forearms, and swings arms slowly but hard sideward and backward, and at the same time retracts head.

8. Starting position: Leaning slightly forward, arms horizontal at sides, palms up. **Movement:** Performer makes small circles about a foot in diameter with hands, circling upward and backward, pressing arms backward and retracting head.

9. Starting position: Same as No. 8 except that elbows are bent and fingertips are touching shoulders. **Movement:** Same as No. 8 except that performer makes circles with elbows.

10. Starting position: Arms vertical. **Movement:** Performer pulls arms slowly downward until fists are beside shoulders, pulling as though he were chinning himself.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

Chapter IV

THE NAVY STANDARD PHYSICAL FITNESS TEST

The Navy Standard Physical Fitness Test consists of five events designed to test strength, endurance, stamina, and some degree of agility.

More specifically this fivefold test is given for the following purposes:

- (a) To determine the physical fitness of the men when they arrive for training.
- (b) To provide information that will help in adapting the physical fitness program to the men's needs.
- (c) To motivate the men toward a higher level of physical fitness.
- (d) To measure the progress of the men after being in service a specific length of time.
- (e) To provide a means of measuring the physical fitness of Navy personnel in one activity in comparison with the personnel of other activities.
- (f) To determine whether or not the physical fitness program is accomplishing its desired results.

GENERAL INSTRUCTIONS

1. The Physical Fitness Test should be given during the first week of the training period and insofar as possible at the end of each 30-day period.

2. The administration of the test should be under the direction of physical fitness officers, chief specialists (A), and other qualified personnel as directed by the commanding officer.

3. Cumulative records of the scores of each man should be kept on a form similar to that on page 23.

4. Results of the Physical Fitness Test should be forwarded to the Bureau of Naval Personnel, as indicated in BuPers ltr.244-EA over NC(775) of October 20, 1942. See suggested report form on page 24.

5. The five events of the test should be taken during one physical training period and in the order indicated.

TEST ADMINISTRATION

Two alternatives are offered for conducting the Physical Fitness Test, depending upon the number of men to be tested and the instructor personnel that is available. In Option A, the instructors supervise, judge, and score each man's test; while in Option B the judging and scoring are done by the men themselves, with the instructor supervising the test in general.

OPTION A.—Where an adequate number of physical fitness officers, chief specialists (A), drill instructors, or other qualified and trained personnel are present, relative to the size of the group to be tested, the following procedure is recommended:

1. A warm-up calisthenic drill should precede the testing. This drill should be strenuous enough to insure a thorough warming-up, but not strenuous enough to produce fatigue. It should take no more than 2 minutes.

2. Before the testing begins, the exact techniques for performing each event correctly should be demonstrated and explained and the most common errors in doing them pointed out. It should be made clear that the first event (squat-thrusts) is a speed event, performed against time; and that the last four test events are endurance events, each of which should be performed as many times as possible.

3. A sufficient number of practice trials should be given for each event to insure that the men understand the proper techniques of execution.

4. A man should have at least a 5-minute rest period between each event of the test.

5. The personnel in charge of each test event should record on each man's scoring card the number of successful attempts made in that test event, together with the corresponding points from the scoring table that he has earned. To obtain the



FIGURE 1.—Squat-thrusts.

man's *physical fitness score*, the number of points made in the five events should be totaled and the sum divided by five. (See scoring tables on pages 21-23.) (Note: Option A should be used whenever possible.)

OPTION B.—Where the administrative personnel is limited, relative to the number of men to be tested, the following method may be used:

1. The men to be tested should be divided into groups of three—*performer*, *judge*, and *scorer*. In some instances it may be necessary and desirable to work in groups of two. In such cases the duties of scorer and judge are combined.

2. The warm-up calisthenic drill should be given for 2 minutes before the testing as explained in **OPTION A**.

3. The exact techniques for performing each test event correctly should be demonstrated and explained as in **OPTION A**. Because the scoring and judging are to be done by the men themselves, especial care should be taken to make the methods of judging and scoring clear to all of them. A few practice trials should be allowed to be sure that the men understood the correct form.

4. The *performer* does the test event. The *judge* corrects mistakes made by the performer. The performer does not, however, stop doing the test even though his incorrect attempts have not been counted. The *scorer* counts the number of correct performances and records them on the performer's card. After the performer finishes with one test event, he becomes the scorer; the scorer becomes the judge; and the judge becomes the next performer, and so on, until all three have performed the test event.

5. After all of the test events have been completed, they should be scored as explained in **OPTION A**, paragraph 5.



FIGURE 2.—Sit-ups.

I. SQUAT-THRUSTS

1. **Purpose.**—To test speed, power, agility, and endurance.

2. **Performance.**—See figure 1.

(a) *Starting position.*—Position of attention.

(b) *Movement.*—(1) At the signal "*Ready—Go*," given by an instructor, performer bends knees and hips and places hands on the deck at a convenient distance in front of feet (squat-rest position). Fingers are pointing forward, and arms may be between, outside of, or in front of bent knees; (2) performer then extends legs backward until his body is approximately straight from shoulders to heels; (3) performer then returns to squat-rest position; and (4) then stands up straight. In this position he will be leaning forward, but chest must be in front of an imaginary line drawn from chin to toes. Performer continues the event as rapidly as possible for 1 minute.

3. **Scoring.**—A score of *one* is given for the successful performance of each complete squat-thrust. No score is given if (a) feet start backward before hands are placed on the deck; (b) hips are raised above shoulder-heel line when feet are back; or (c) performer does not straighten up on the fourth count.

4. **Instructions.**—In the preliminary practice the instructors should point out that (a) performer will do better if he does not take full knee bend, but bends knees only to about a right angle; (b) when legs are thrust back, shoulders should be in front of hands (if shoulders are to the rear of hands, the recovery movement is decidedly slowed up), and arms should remain straight.

II. SIT-UPS

1. **Purpose.**—To test the strength and endurance of the abdominal muscles.

2. **Performance.**—See figure 2.

(a) *Starting position.*—Performer lies on back on the deck, knees straight, feet approximately 12 inches apart, with hands clasped behind head. Scorer kneels on the deck at performer's feet and holds soles of performer's feet against his own

(scorer's) knees, pressing them firmly down to the deck.

(b) *Movement*.—(1) Performer raises his upper body, rotating it somewhat to the right, and bends forward far enough to touch *right* elbow to *left* knee. Knees may bend slightly as he sits up. (2) Performer lowers his body until his back again touches the deck; (3) performer again sits up, but this time rotates trunk to the left and touches *left* elbow to *right* knee; (4) he again lowers his body until his back touches the deck. He continues as many sit-ups as possible. The performer must not pause during the test. The movement must be continuous either when touching the deck with back or when leaning forward, touching knee.

3. *Scoring*.—Performer is given credit for one sit-up every time he completes the movement by touching elbow to knee. No score should be counted if (a) performer unclasps hands from head; (b) rests on the deck; (c) or keeps knees bent when lying back on the deck or when beginning the sit-up.

4. *Instructions*.—Performer should be warned that (a) he must keep knees straight until he starts to sit up; (b) he must touch knee with opposite elbow; (c) he may not rest while being tested; and (d) he may not push from the deck with elbow. For violation of any of these items, except resting, the movement is not counted. If performer stops to rest, this test event is discontinued. (The usual cadence is about one sit-up every 2 seconds.)

III. PUSH-UPS

1. *Purpose*.—To test the strength and endurance of the "pushing muscles" of arms and shoulder girdle.

2. *Performance*.—See figure 3.

(a) *Starting position*.—Performer lies face downward on the deck; hands are on the deck at sides of shoulders, with fingers pointed forward;

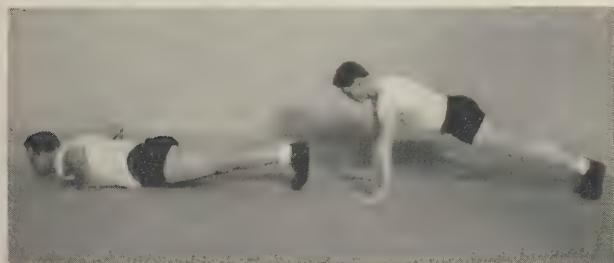


FIGURE 3.—Push-ups.

toes are resting on deck (soles of feet approximately vertical).

(b) *Movement*.—(1) Performer raises body from the deck by straightening his arms so that the body is straight from shoulders to heels, with weight resting on hands and toes; (2) from this position performer lowers body by bending elbows until chest touches the deck. He repeats the movement as many times as possible.

3. *Scoring*.—Performer is credited with one push-up every time his arms are completely straightened and the exercise is done in acceptable form.

4. *Instructions*.—The movement is not scored if (a) arms are bent at the top of the movement; (b) any part of the body other than hands, toes, and chest touch the deck after the test has begun; (c) shoulders are pushed up first while hips are stationary near the deck; (d) hips are raised upward and backward before shoulders are pushed up. There should be no penalty for hips being slightly out of line if the whole body is moving upward at about the same speed.

IV. SQUAT-JUMPS

1. *Purpose*.—To test the strength and endurance of muscles of the legs.

2. *Performance*.—See figure 4.

(a) *Starting position*.—Standing; hands (palms down) are clasped on top of head; feet are from 4 to 6 inches apart, with heel of left foot on a line with toes of right foot.



FIGURE 4.—Squat-jumps.



FIGURE 5.—Pull-ups.

(b) *Movement*.—(1) From the standing position performer drops to a squat on right heel; (2) he then immediately springs forward until, with both knees straight, and both feet clear off the deck, he interchanges the position of his feet so that right foot is now in front, and drops to a squat on left heel; (3) he then springs to the upright position again and continues the exercise as many times as possible. The upper body should be kept fairly erect.

3. **Scoring**.—Every time performer springs up from the squat position off the deck he is credited with one squat-jump. A movement is not scored if (a) performer fails to descend to a complete squat; (b) he fails to straighten legs completely while he is in the air and interchanging his foot positions; (c) he removes hands from head; or (d) discontinues the movement and comes to a stop.

4. **Instructions**.—The most common errors are getting feet too far apart, fore and aft, and failing to squat down on rear heel. This position should be demonstrated clearly, and the men should be given some practice until the movement is fixed in their minds. If performer gets feet

too far apart but comes to a squat on rear heel, there should be no penalty. The action should be continuous throughout.

V. PULL-UPS

This test event needs special gear. Pipes, bars, or other rigid horizontal supports not over 2 inches in diameter should be erected high enough that performer can hang at full length without feet touching the floor. (Seven feet nine inches is the preferred height.)

1. **Purpose**.—To test the strength and endurance of the “pulling muscles” of arms and shoulders.

2. **Performance**.—See figure 5.

(a) *Starting position*.—Performer hangs from the bar, using either forward or reverse grip. (Forward grip recommended as illustrated.) If support is not high enough for performer to hang without touching feet to the deck, he should bend his knees enough for clearance.

(b) *Movement*.—(1) Performer pulls himself up until chin is brought above the level of the bar (he may raise legs if he does not kick or “kip”); (2) he then lowers himself again until elbows are completely straight and continues the exercise as many times as possible.

3. **Scoring**.—Each time performer pulls chin above the support in correct form he is given credit for one pull-up. He is not credited with a pull-up if (a) arms are not straight at the beginning of the pull-up; (b) he fails to raise his chin above the level of the bar; (c) he kicks or does a “kip” movement; or (d) he stops to rest.

4. **Instructions**.—The instructor should insist that the arms be straight at the bottom of the pull-up and that the performer’s body is kept from swinging. (Note: Such aids as a resin bag or a cake of magnesium carbonate, if available, will prevent the hands from becoming slippery.)

NAVY STANDARD PHYSICAL FITNESS TEST SCORING TABLES

The scoring tables that follow are based on a group of well-conditioned Navy men. The tables are so constructed that a score of 50 is *average* for this group of well-conditioned men. Recruits will present scores running from low in the scale (10–20) to high scores. After a month of training, scores below 40, in general, should be con-

sidered as unsatisfactory and efforts made to provide extra motivation and especially devised training programs for such men. With 8 to 12 weeks of training, the goal of 50 or above should be sought as an acceptable standard for naval physical fitness. These test events may be used

as conditioning exercises without their usefulness as tests being impaired. The men should be encouraged to practice the test events. Scoring tables should be placed on bulletin boards in barracks and aboard ship so that men may follow their progress.

I. SQUAT-THRUSTS IN 1 MINUTE

Number of Squat-Thrusts	T-Score	Number of Squat-Thrusts	T-Score	Number of Squat-Thrusts	T-Score	Number of Squat-Thrusts	T-Score
48	100	38	74	28	49	18	27
47	98	37	71	27	46	17	25
46	95	36	68	26	44	16	23
45	92	35	66	25	42	15	21
44	90	34	63	24	39	14	19
43	87	33	61	23	37	13	17
42	84	32	58	22	35	12	15
41	82	31	56	21	33	11	14
40	79	30	53	20	31	10	12
39	76	29	51	19	29	9	10
						8	9
						7	7
						6	6
						5	5
						4	4
						3	2
						2 or less	1

II. SIT-UPS

Number of Sit-Ups	T-Score	Number of Sit-Ups	T-Score	Number of Sit-Ups	T-Score	Number of Sit-Ups	T-Score
205	100	105	81	81	74	61	66
200	99	100	80	80	74	60	65
195	98	99	79	79	74	59	65
190	98	98	79	78	73	58	64
185	97	97	79	77	73	57	64
180	96	96	78	76	72	56	63
175	95	95	78	75	72	55	63
170	95	94	78	74	72	54	62
165	94	93	78	73	71	53	61
160	93	92	78	72	71	52	61
155	92	91	77	71	70	51	60
150	91	90	77	70	70	50	59
145	90	89	77	69	70	49	59
140	89	88	76	68	69	48	58
135	88	87	76	67	69	47	58
130	87	86	76	66	68	46	57
125	86	85	75	65	68	45	56
120	85	84	75	64	67	44	56
115	84	83	75	63	67	43	55
110	82	82	75	62	66	42	54

Number of Sit-Ups	T-Score	Number of Sit-Ups	T-Score	Number of Sit-Ups	T-Score	Number of Sit-Ups	T-Score
41.....	53	31.....	45	21.....	33	11.....	15
40.....	53	30.....	44	20.....	32	10.....	12
39.....	52	29.....	44	19.....	31	9.....	9
38.....	51	28.....	43	18.....	29	8.....	5
37.....	50	27.....	42	17.....	28	7 or less.....	1
36.....	50	26.....	41	16.....	27		
35.....	49	25.....	40	15.....	24		
34.....	48	24.....	38	14.....	22		
33.....	47	23.....	36	13.....	20		
32.....	46	22.....	35	12.....	18		

III. PUSH-UPS

Number of Push-Ups	T-Score	Number of Push-Ups	T-Score	Number of Push-Ups	T-Score	Number of Push-Ups	T-Score
89.....	100	69.....	90	49.....	75	29.....	53
88.....	99	68.....	89	48.....	74	28.....	51
87.....	99	67.....	89	47.....	73	27.....	49
86.....	99	66.....	88	46.....	72	26.....	48
85.....	98	65.....	87	45.....	72	25.....	46
84.....	98	64.....	87	44.....	71	24.....	44
83.....	97	63.....	86	43.....	70	23.....	43
82.....	97	62.....	85	42.....	69	22.....	40
81.....	96	61.....	85	41.....	68	21.....	39
80.....	96	60.....	84	40.....	66	20.....	36
79.....	95	59.....	83	39.....	65	19.....	34
78.....	95	58.....	83	38.....	64	18.....	33
77.....	94	57.....	82	37.....	63	17.....	31
76.....	94	56.....	81	36.....	62	16.....	28
75.....	93	55.....	81	35.....	60	15.....	26
74.....	93	54.....	80	34.....	59	14.....	24
73.....	92	53.....	79	33.....	58	13.....	21
72.....	91	52.....	78	32.....	57	12.....	19
71.....	91	51.....	77	31.....	55	11.....	16
70.....	90	50.....	76	30.....	54	10.....	13
						9.....	11
						8.....	8
						7.....	5
						6 or less.....	3

IV. SQUAT-JUMPS

Number of Squat-Jumps	T-Score	Number of Squat-Jumps	T-Score	Number of Squat-Jumps	T-Score	Number of Squat-Jumps	T-Score
127.....	100	111.....	95	98.....	90	86.....	85
123.....	99	108.....	94	95.....	89	83.....	84
120.....	98	106.....	93	93.....	88	81.....	83
117.....	97	103.....	92	90.....	87	79.....	82
114.....	96	100.....	91	88.....	86	77.....	81

Number of Squat-Jumps	T-Score	Number of Squat-Jumps	T-Score	Number of Squat-Jumps	T-Score	Number of Squat-Jumps	T-Score
75	80	51	65	34	50	19	28
73	79	49	64	33	49	18	25
71	78	48	63	32	47	17	23
69	77	47	62	31	46	16	21
68	76	46	61	30	45	15	19
66	75	45	60	29	44	14	16
64	74	43	59	28	42	13	13
63	73	42	58	27	41	12	10
61	72	41	57	26	39	11	7
59	71	40	56	25	38	10 or less	3
58	70	39	55	24	36		
56	69	38	54	23	35		
55	68	37	53	22	33		
54	67	36	52	21	31		
52	66	35	51	20	29		

V. PULL-UPS

Number of Pull-Ups	T-Score	Number of Pull-Ups	T-Score	Number of Pull-Ups	T-Score	Number of Pull-Ups	T-Score
37	100	27	87	17	70	7	43
36	98	26	85	16	68	6	40
35	97	25	83	15	66	5	37
34	95	24	82	14	64	4	34
33	94	23	80	13	62	3	28
32	93	22	79	12	59	2	23
31	92	21	77	11	56	1	19
30	91	20	75	10	53		
29	90	19	74	9	50		
28	88	18	72	8	47		

NAVY STANDARD PHYSICAL FITNESS TEST SCORE CARD

Name Rank or Rating

Station and Co. or Ship and Division

Date taken												
Height												
Weight												
Age												
Posture												
Record of events	No.	Pts.*	No.	Pts.	No.	Pts.	No.	Pts.	No.	Pts.	No.	Pts.
1. Squat-thrusts												
2. Sit-ups												
3. Push-ups												
4. Squat-jumps												
5. Pull-ups												
Total points												
Total points divided by 5 gives P. F. S.												
Gain in P. F. Score												
Instructor's initials												
Judge's initials												
Recorder's initials												

(NOTE: The form on the left is the card used for recording the individual's score as he is being tested. The form shown is approximately one-third the desirable size.)

*See Point Scoring Table to get points for each of events completed.

SUGGESTED FORM LETTER FOR REPORTING RESULTS OF NAVY STANDARD PHYSICAL FITNESS TEST

In order to standardize the procedure for reporting Physical Fitness Test results to the Bureau of Naval Personnel, the following form letter is recommended:

From: Chief of Naval Personnel.
 To:
 Via:
 Subject: Navy Standard Physical Fitness Test, Report of results of.
 Reference: (a) BuPers. Ltr. P-244-EA over NC(775) of October 20, 1942.

1. In accordance with reference (a), the subject information is submitted concerning _____
 (Name of unit or group tested.)
2. Number of men in this group tested on this date _____
3. Date this same group of men was previously tested _____
4. Average Physical Fitness Score of this group of men tested _____
5. Average gain over preceding Physical Fitness Score of this same group _____
6. Number of men in the group tested whose Physical Fitness Scores were:

80 or above	70 to 79, incl.	60 to 69, incl.	50 to 59, incl.	45 to 49, incl.	40 to 44, incl.	35 to 39, incl.	30 to 34, incl.	25 to 29, incl.	20 to 24, incl.	19 or less

7. Average number of times events were performed by men tested:

Squat-thrusts	Sit-ups	Push-ups	Squat-jumps	Pull-ups

8. Highest and lowest number of times events were performed by men tested:

	Squat-thrusts	Sit-ups	Push-ups	Squat-jumps	Pull-ups
Highest number of _____					
Lowest number of _____					

THE MEASUREMENT OF POSTURE

Among the items listed on the Navy Physical Fitness Test Score Card is that of Posture. Standing posture may be rated by comparing a man's side view with standardized pictures of various grades of posture. These standards are shown in the chapter on Posture, figure 4, page 12. The instructor should compare the posture of the man with these standards and rate him accordingly. A letter grade will be given to the man according to the picture which he resembles most. In cases where the man's posture falls between two of the standards, it should be graded according to the poorer picture, with a plus sign added to the letter grade.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

Chapter V

SWIMMING

In the Navy Physical Fitness Program swimming is given paramount consideration. To be able to swim may be to be able to live, and the Navy is continually giving increased attention to this important phase of the bluejacket's training. Aside from being a possible means of saving one's life, swimming is an excellent body-building activity. It develops endurance and coordination, and at the same time gives relaxation and is recreational activity.

This chapter considers four general areas in swimming as they are related to use in the Navy. These are (a) fundamental swimming skills; (b) functional swimming drills; (c) abandoning ship drills; and (d) rescue drills. Form and speed swimming are not emphasized because of time limitations in training. In the Navy it is more important that a man have a feeling of being at home in the water, and that he be familiar with several means of keeping afloat, rather than that he be able to execute strokes in perfect form. Where swimming facilities are available, there should be a minimum of three 1-hour periods of instruction per week for nonswimmers, or for those who do not swim well, and at least one hour per week for swimmers. *It is impossible to be too good a swimmer.*

NAVY STANDARD SWIMMING TESTS

Minimum swimming requirements have been established in order to classify men as to their swimming abilities. These tests also serve as a guide in formulating the swimming program at various training stations and naval activities. It should be kept in mind that these tests represent *minimum* swimming requirements. Where time, facilities, and instructional personnel permit, it is expected that additional instruction will be offered with resultant optional additions to the standard test requirements.

THIRD-CLASS, SECOND-CLASS, AND FIRST-CLASS SWIMMING TESTS

The minimum requirements for classification of swimmers are as follows:

1. **Swimmer—Third Class.**—Enter the water, feet first, from a minimum height of 5 feet, and swim 50 yards. This test should be taken by all men as early as possible in their training period. Those unable to pass it will be classified as nonswimmers and should be given instruction in fundamental swimming skills. Those men who are able to just meet requirements might be classified as "*swimmers who need help*" and, therefore, also should receive additional instruction in fundamental swimming skills. This test (Swimmer-Third Class) is the official Navy Standard Minimum Swimming Test and is the basis for designation of men as swimmers or nonswimmers.

2. **Swimmer—Second Class.**—Prerequisite: Successful completion of test for Swimmer-Third Class.

Enter the water, feet first, from a minimum height of 10 feet and remain afloat for 10 minutes. During this time the man must swim 100 yards and use each of three strokes for a minimum distance of 25 yards. This swimmer is classified as one who can "*take care of himself*."

3. **Swimmer—First Class.**—Prerequisite: Successful completion of test for Swimmer-Second Class.

To become a Swimmer—First Class, a man must be able to do each of the following:

1. While in the water, approach a man of approximately his own size, demonstrate one "break or release," get him in a carry position, and tow him 25 yards.

2. Enter water, feet first, and swim under water for 25 yards. Swimmer is to break the surface for breathing twice during this distance, at intervals of approximately 25 feet.

3. Remove trousers in water and inflate for support.

4. Swim 220 yards, using any stroke or strokes desired.

This swimmer is classified as one who not only can take care of himself, but also is able "*to help others*" in case of emergency.

I. FUNDAMENTAL SWIMMING SKILLS

For the men classified as nonswimmers, or those who "need help," certain basic swimming essentials should be offered.

ESSENTIALS FOR BEGINNERS

1. Adjustment to the Water.—This consists of (a) talking and reasoning with beginners about water; (b) continually stressing importance of relaxing while in the water; (c) instruction in proper methods of breath control such as breath holding, inhaling, and exhaling; (d) opening the eyes underwater; and (e) practice on gradual submersion of various parts of the body.

2. Breathing.—One of the most fundamental factors in learning to swim is proper breathing. This may be taught by land and water drills with (a) rhythmic breathing (inhaling through mouth

and exhaling through nose or mouth while face is in the water); (b) bobbing in shallow and deep ends of pool; (c) coordination of breathing with arm stroke; and (d) coordination of breathing with leg kick.

3. Buoyancy and Control of Body Position.—Included under this heading are (a) buoyancy floats such as jelly-fish, back, and front floats in shallow water (figs. 1, 4, 5, and 6); (b) glides on stomach and back with push-offs from side of pool; (c) glide on back with roll over to stomach, and vice versa; (d) regaining standing position from above floats and glides.

4. Arm Movements.—May be taught by (a) explanation of human stroke, more commonly known as the "dog paddle"; (b) land drills with and without rotary breathing; (c) arm movement while standing in shallow water; (d) sculling and finning strokes for later use while swimming on the back.

5. Leg Movements.—These are composed of (a) land drills on the flutter kick both from a stomach and back position; (b) practicing flutter kicks on stomach and back in the water by "bracketing" one's self against the side of pool; (c) push-off and glide using flutter kick to go across pool on stomach and back.

6. Coordination of the Stroke.—This includes combining the use of arms, legs, and breathing into an elementary style of swimming, such as (a) the human stroke on the stomach (figs. 13, 14, 15, and 16); (b) the combined stroke on the back (finning or sculling with slow flutter kick) (fig. 3).

7. Elementary Methods of Entering Water.—There should be (a) jumping from deck of pool into shallow water, later into deep water; (b) gradually increased heights of jump; (c) diving, head first, from the following positions: sitting, kneeling, crouching, from one foot, from both



FIGURE 1.—Jelly-fish float—shallow water.



FIGURE 2.—Jelly-fish float—deep water—underwater view.



FIGURE 3.—Float on back—using slow up and down movements—underwater view.

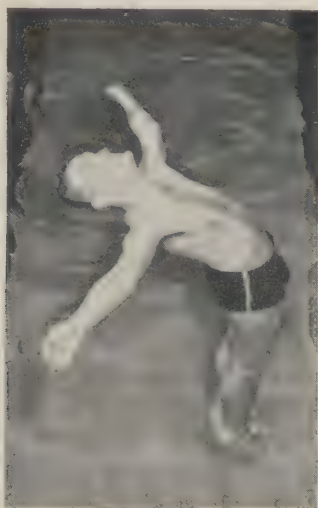


FIGURE 4.—1, Back float—start in shallow water.

feet. Dives first should be made from the shallow, and later, from the deep end of the pool.

FLOATING, TREADING, AND SCULLING

These skills, which are basically sustaining in nature, are so important in making a bluejacket seaworthy that they should be thoroughly mastered by every swimmer, advanced and beginners alike. They are especially valuable in developing confidence, ability to relax, endurance, and muscular control.

FLOATING

Floating is effortless, therefore one may use it in situations in which no progress is necessary and under conditions in which it is highly advisable to conserve energy. It enables a man to rest and to keep his head above water for an indefinite period of time. Once the skill has been thoroughly mastered, confidence is developed and the tendency to become panicky is eliminated. The ability to float may make survival possible when one finds himself helpless to use his limbs because of wounds or other injuries. Floating aids an individual in working out muscular cramps and to disrobe if the conditions require it.

1. Jelly-fish or Tuck Float.—This is a float on the stomach to enable the instructor to determine the potential buoyancy of a man. The area of a man's back which rises above the surface of the water gives an indication of the possibility of his floating on his back (figs. 1 and 2).

Instruction in the jelly-fish float should begin in the shallow end of the pool in water about waist deep. The man should bend forward at the



FIGURE 5.—2, Back float—legs drawn up and arms outstretched.

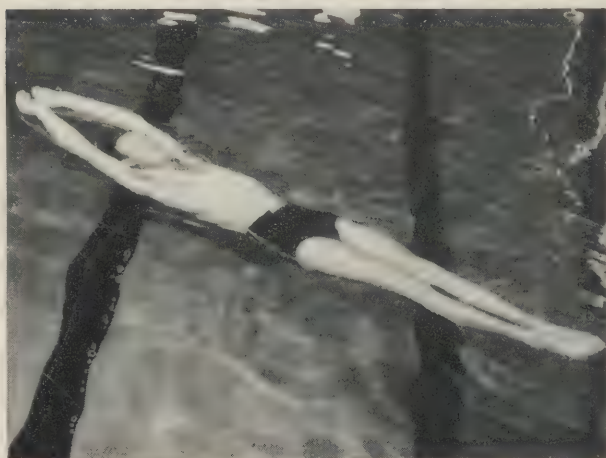


FIGURE 6.—3, Back float—arms and legs both outstretched.

waist and place his hands on the front of the thighs. Next, he inhales deeply through the mouth and holds the breath as the face and body are gradually submerged. Now the hands are slowly slipped down to the shins or ankles and firmly grasp them. Thighs and knees are drawn up until they are pressed snugly against the chest. At the end of this procedure the man will be floating face down with part of his back appearing above the surface of the water as shown in figure 1. After the man seems to have mastered the skill in shallow water have him practice it in the deep end of the pool (fig. 2). The ability to execute a jelly-fish float correctly will develop confidence in the individual and aid him in learning to float on his back.

2. Back Float in Shallow End of Pool.—It is well to have the men practice the back float in the shallow end of the pool first because, with

confidence, the men will relax more completely and assume their correct positions owing to their greater feeling of safety in shallow water.

Standing in the shallow end of the pool the men should assume a knee bend position until they have submerged their shoulders. As soon as the shoulders are beneath the surface the man will immediately experience the gradual loss of weight of his body in the water. The chest is then pushed well forward, the shoulders are rotated backward, and the arms are extended in a stretching manner outward from the shoulders with the palms of the hands turned up (fig. 4). Arms and hands should be just below the surface of the water. The man takes a deep breath and holds it; at the same time he slowly lays his head back in the water and gradually loses his balance backward. He should be told to relax but stretch with the arms and gradually move them in toward the head until the positions shown in figures 5 and 6 are reached. It is important that the man go into his float on the back very gradually. A partner may stand behind the performer as he tries the back float in the shallow end of the pool for the first time. This will undoubtedly increase his confidence.

As a safety precaution it is well for the instructor to demonstrate to the group the correct and easiest way to regain one's footing on the bottom of the pool from the back float position. To do this, the performer draws up the knees toward his chest, at the same time bending forward, sweeping the hands downward and forward. Then the feet are placed on the bottom of the pool.

3. Back Float in the Deep End of the Pool.—The performer should grasp the scum gutters of the pool with arms extended sideward as far as



FIGURE 7.—Balanced float—deep water—underwater view.

possible and allow his body to assume a vertical position close to the side of the pool. The feet should be hanging down and motionless with the body submerged until the shoulders are under the surface. The chest is now pushed well forward, shoulders are rotated backward, and head laid back. A deep breath is now taken in through the mouth and retained. The gutter is now released with one hand with the arm stretched out, palm of the hand facing up. The opposite arm is now released from the gutter and is also stretched out on the surface of the water. The legs are to be allowed to hang motionless and in a vertical plane. The shoulders should be gradually rotated backward as far as possible and the chest lifted until the man's back is considerably arched. The arms should be moved backward slowly in their outstretched position until the hands can touch each other. During this time the legs and feet will rise slowly.

After the beginner has experienced the feeling of floating motionless and without effort on his back, he will be more relaxed in his other swimming skills. He will no longer have doubt or fear about his body sinking while in the water.

It should be pointed out, however, that individuals vary considerably in their bodily proportions, specific gravity, and vital capacity; hence, everyone will float and balance differently in the water. As a rule, large, fat persons usually float well on their backs, especially when their size is due to fatty tissue, less muscle, and smaller bones. The person who is able to float on his back in a horizontal position is usually well adapted structurally to long distance swimming. The large, heavy-boned, and hard-muscled type of individual usually finds it difficult to float in any position except a vertical one. With practice, almost everyone will be able to float on his back in an easy, effortless, relaxed, and motionless manner in one of the following positions: (a) Horizontal float as shown in figures 6 and 9; (b) horizontal float, legs drawn up (fig. 5); (c) balanced float as shown in figure 7; vertical float as shown in figures 4 and 8. For those men who experience a great deal of difficulty in floating motionless on the back, it is probably advisable to encourage them to employ a slow, relaxed, easy flutter kick of the feet along with gentle and slow sculling movements of the hands to maintain a buoyant horizontal position. Such movements will not

cause the individual to expend a great amount of energy (fig. 3).

4. Additional Suggestions for Floating.—Practice deep breathing and breath-holding. This will tend to increase the performer's lung capacity. The average floater must hold his breath and then exhale and then inhale immediately, in order to maintain a motionless floating position. It also should be remembered that a person who floats in fresh water in a swimming pool will have greater buoyancy in salt water.

The beginner in floating usually has a tendency to worry about his feet sinking. As a result he often forgets to maintain the arch in the back and consequently the rest of his body sinks as his feet go down. For this reason it is much better to start in a motionless and vertical position. Remember that "a body at rest tends to remain at rest." Therefore, it is wise to start to float with no motion of either hands or feet. One who cooperates with the law of inertia should stay afloat. The feet will usually rise from the vertical plane toward the horizontal very slowly and gradually. Men should be warned not to become impatient if the feet do not rise quickly.

To assume and maintain a horizontal float on the back, remember that one must extend and stretch the arms out from the shoulders, keeping the arms and hands (palms turned up) near the surface of water. As the feet gradually rise, slowly start moving the arms back toward the head and stretch with the arms and also stretch with the feet. One ought to have a feeling of stretching fore and aft. Imagine that the feet and hands are playing a game of tug of war (fig. 6).

TREADING

Learning to tread water in a vertical position tends to develop confidence. Many men have needlessly lost their lives because of their inability to perform this simple skill. Treading will easily keep a person's head above the water. It is a good foundation for the building of other strokes and lifesaving skills. It enables a man to sustain his body in a vertical position with kicking movements alone. This might prove of untold value to anyone who has injured arms. Treading is useful to maintain equilibrium when floating about in a life belt or life jacket under conditions when there is no reason to progress in the water. By means of a strong treading kick a man can



FIGURE 8.—Vertical float—deep water—underwater view.

force his head and shoulders quite high out of the water. This might be necessary in calling for help, in looking about, and possibly clearing the surface of burning oil by means of splashing water with the arms. Treading is useful when it is necessary to use the hands for carrying or supporting equipment of any kind, administering first aid, or supporting an injured shipmate in the water, disrobing, and inflating clothing for use as a means of support.

1. Foreleg-Whip Frog Kick for Treading.—This is a kick of continuous action in which the forelegs whip around and down in a semicircular action from the knees. The water is driven downward from the sides of the legs and from the bottoms of the feet. This kick will force the body of an individual quite high out of the water when vigorously applied.

2. Modified Frog Kick for Treading.—Owing to the slow movement of the legs in the frog kick, the individual is not likely to tire as quickly as with some of the others. It also makes it possible for a swimmer to remain quite high in the



FIGURE 9.—Horizontal float—deep water—underwater view.



FIGURE 10.—Treading and sculling—using frog kick—underwater view.

water. The legs are drawn up together with knees spread and then separated and extended as shown in figure 10. Finally the legs and feet “squeeze” the water until the feet are about 20 inches from each other. The movement of drawing, spreading, and squeezing with the legs is then repeated. Emphasis should be placed upon maintaining a slow, steady, and continuous movement of the legs. Group drill for the frog kick should begin by having the men execute the movements while facing and grasping the gutter in a vertical position. Gradually, the men will be able to do the leg movements without hanging on to the pool.

3. Scissors Kick for Treading.—Most men will find this an easy, simple kick to master. It is similar to walking and is a natural movement. The practice of the scissors kick should start with land drills. The men should lie on their sides with the feet together and extended (fig. 17), then slowly draw them up in a semi-tucked-up position (fig. 18). The legs now separate, with one leg moving forward and the other leg moving back-



FIGURE 11.—Treading and sculling—using scissors kick—underwater view.

ward (fig. 11). After the legs are extended, they are then ready to “squeeze” together (fig. 19). This movement should be a slow, steady, and continuous one. After the kick has been thoroughly mastered on land, water drills should follow in which the men hold on to the gutter with one hand, their bodies vertical and at right angles to the side of the pool, and practice the movements. Finally, let go of the gutter and tread without any support (fig. 11). Such commands as “Draw—Spread—Squeeze,” or the numbers “One—Two—Three” can be used by the instructors as a rhythmic cadence for drill in the movements.

4. Bicycle-Pedal Kick for Treading.—This is similar to the scissors kick. It is almost the same as riding a bicycle or climbing a ladder. The upper part of the body should lean slightly forward. The legs are alternately drawn up, extended, and at the same time, thrust downward. It is necessary to maintain a rapid and continuous motion of the legs in order to sustain the body in a vertical position, hence the kick is more tiring than either the frog or scissors kicks (fig. 12).

5. The Egg-Beater Kick for Treading.—This is the most difficult to master of all types of treading kicks. The man assumes a sitting position in the water and it resembles the action of the old-fashioned mechanical egg-beater. The movement consists of alternately rotating the lower part of the legs (from the knees down) in a circular, whip-like manner. As the legs swing from the knees, which act like pivot points, the feet are also rotated inward. It requires considerable flexibility of the knees and ankles to perform this stuntlike, treading kick. Because of the difficulty in executing this kick, little stress need be placed on teaching it to large groups in the Navy. It is included here, however, for the information and possible use of more advanced swimmers.

SCULLING

The ability to scull with the hands in various positions in order to sustain the body in a vertical or horizontal position is important, especially if the lower limbs should be incapacitated. Sculling enables a man to acquire a sense of balance in many different positions in the water and to control his body. It makes maneuvering much easier. It also aids in assisting anyone to float on his back with a minimum expenditure of energy. Sculling likewise is an aid when treading water.

1. Vertical Sculling.—This skill will be most useful to Navy men who find themselves afloat in the water and unable to use their legs. The body is in an upright position with the feet hanging in a relaxed manner directly underneath while the head is held just above the surface. One method of sculling in this position is to weave the hands rather vigorously back and forth in front of and to the sides of the body in a figure-eight movement. This movement forces water downward and keeps the body up.

Another method of sculling is to drop the hands down near the hips in the water. From this position turn the hand to about a 45° angle away from the body, the thumbs turned downward. With the palms of the hands push the water away from the body until the hands are about 2 feet out from the sides of the body. Immediately, the hands are rotated so that the thumbs are up. The hands now recover, pulling water toward the sides of the body. When the hands reach the sides they are again rotated until the thumbs are down as in the starting position, and the movements are repeated. The emphasis is put upon the push-away phase of the stroke. The hand, wrist, and lower arm do most of the work in sculling.

Still another method of sculling is to place the hands, palms down, on the water. The hands merely press down in the water several feet in depth and recover again. Land drills, followed by shallow-water practice, should be held before sculling is attempted in deep water.

2. Horizontal Sculling.—While lying on the back with the legs extended, feet pointed and hands by the hips, the performer pulls his hands downward and back toward the shoulders with a vigorous action. This scull will move the body forward in the direction of the feet. This skill might prove of value in situations where the feet could not be used and it is necessary to move ahead toward some object such as a life raft or a piece of floating debris.

3. Flutter-Back Sculling.—This is one of the best sustaining strokes to stay afloat for a long period of time or to move slowly and easily in some direction. The performer lies on his back and kicks with a slow, alternate, up-and-down thrash of the legs. The legs and feet ought to be in a knock-kneed and pigeon-toed position. The hands merely execute a slow sculling movement at the hips.



FIGURE 12.—Treading and sculling—using bicycle-pedal kick—underwater view.

4. Sculling and Treading.—More energy saving than either sculling or treading alone, is a combination of the two movements. When the hands are employed along with the kick of the legs, the leg kick does not have to be as vigorous, as strong, or as rapid as it does when they are not used, and vice versa. The combination of sculling with the hands and treading with the legs is an economical expenditure of power for remaining in a vertical position where no progress in any direction is required. The division of labor between arms and legs makes the combined use of treading and sculling a conserver of energy, and allows both pairs of limbs to move very slowly and almost effortlessly (figs. 10, 11 and 12).

SWIMMING STROKES

In the consideration of swimming thus far, emphasis has been placed on (a) the building of confidence and elimination of a man's fear of the water; (b) teaching him to stay afloat; and (c) simple methods by which he might negotiate short distances. Four standard swimming strokes which have greatest all-around value to men of the Navy are next explained. If a man can perform these strokes well he will be more versatile in the water, and at the same time will be able to conserve his much needed energy as a result of being able to change styles of swimming. Perfecting of form is not the major consideration of Navy swimming. Explanations, however, of these four styles of swimming are presented somewhat in detail, in order that men may use them as patterns for developing the greatest degree of seaworthiness of which they are capable.

HUMAN STROKE OR "DOG PADDLE"

Although the "dog paddle" is one of the most elementary swimming strokes, and usually is the

first to be taught to beginners, it also is valuable as a sustaining stroke for men fully clothed or wearing life jackets. It is suitable when short distances are to be covered and the time element is not important. In restricted or congested areas the human stroke can be used to good advantage because most of the movements are under the body and the position of the head enables a man to look about him.



FIGURE 13.—Human stroke—right arm extended ready to begin pull, left leg ready to kick downward.



FIGURE 14.—Human stroke—right arm has completed pull downward; left leg has finished downward kick.



FIGURE 15.—Human stroke—right arm bends on recovery.



FIGURE 16.—Human stroke—right arm finishes recovery and cycle.

Leg Movements.—A slow, alternate, up-and-down leg kick is executed as shown in figures 13, 14, 15, and 16. The knees are bent and the feet are extended in a “pigeon-toed” manner (fig. 15).

Arm Movements.—Arms are moved alternately. When the right arm is extended and ready to make its downward pull, the left arm has just completed this movement and is ready to make its recovery (fig. 13). The pull itself is through an arc of approximately 90° and the arm is kept straight throughout its downward and backward movement (fig. 14). At the end of the pull the arm begins the recovery by bending at the elbow (fig. 15) and slides forward underneath the surface of the water to the extended position (fig. 16).

Coordination of Arm and Leg Movements.—As the right arm begins its pull the left leg kicks downward and they both are completed at the same time (fig. 14). This is also shown in figure 16 when the left arm and right leg have just completed their downward movements. As each arm completes its recovery in an extended position forward, advantage is taken of the momentary coast or glide which follows (figs. 14 and 16).

Breathing.—Since the head is generally held out of the water all of the time during this stroke the problem of breathing is not difficult. The tendency in beginners to hold their breath and to stroke too fast should be corrected early in their training.

Practice Drills.—The following practice drills are recommended:

1. Land drills on arm and leg movements.
2. “Bracket” drills on leg movements.
3. Cross pool flutter kick glide drill.
4. Shallow water drills on arm movements.
5. Coordinated arm-and-leg-movement drills on land, across pool, and lengthwise of pool.

SIDE STROKE

The side stroke is a good relief stroke after one has tired of swimming the human stroke, the breast stroke, or the elementary back stroke. Slight modification of the side stroke enables a swimmer to tow or carry equipment or materials in the water and it can be used when lifesaving carries are employed. If an upper limb is injured this stroke allows the victim to still make progress by swimming with one arm only. The side over-arm stroke is an excellent one to use in extremely rough water. Since both the arms and legs recover

and thrust underneath the surface, this stroke is practically noiseless and thus is less likely to attract attention of the enemy. The stroke also can be used for swimming under water.

Coordination of Standard Scissors Kick and Arm Strokes.—Either the standard scissors kick or the inverted scissors kick may be used with the arm movements to furnish the propelling power for the side stroke. A man usually will find that he favors swimming this stroke on one particular side. Let him choose the side which feels most natural to him. Lying directly on his side he should assume a position with the side of his face lying in the water and the legs extended. One arm which is designated as the trailing arm will be extended along the top side of the body with the hand resting on the thigh (fig. 17). The opposite or under arm will be in an extended position beyond the head (fig. 17). On the count of one, the legs are drawn up together toward the waist while the under arm, which was extended beyond the head, begins its pull toward the chest. At the same time the trailing arm recovers from the thigh up to the chest under water. On the count of two, the legs separate. In the standard scissors kick the top leg goes forward while the bottom leg goes backward. Emphasis should be placed upon achieving a good wide separation or spread of the legs. While the legs are spreading the trailing arm begins to push the water while the under arm begins to recover. On the count of three, the legs (now straight and separated) begin the movement of vigorously "squeezing or thrusting" together while the arms finish their movements of pushing and recovering. At the end of this movement the legs are together and extended, while one arm lies on top of the thigh and the under arm is extended beyond the head. This is the point where a coast or glide is taken and the body relaxes momentarily.

Coordination of Inverted Scissors Kick and Arm Strokes.—If a man prefers to use the inverted scissors kick, in which his bottom leg goes forward while the top leg goes backward, he merely needs to roll over from the natural side to the opposite side. Instead of lying directly on the side, however, it is well to lie partially on the back. The coordination of arm and leg movements is essentially the same as when swimming the side stroke with the standard scissors kick. The arms meet at the chest while the legs are drawn up toward the waist; however, the knees are apart

but the feet are together as the drawing motion is executed (fig. 18). Then the legs are separated and spread widely apart, with the bottom leg extending forward while the top leg swings backward (fig. 19). The legs are then "squeezed" vigorously together after which the glide portion of the stroke is taken (fig. 20). The side stroke using the inverted scissors usually seems easier to the swimmer than the side stroke with the standard scissors kick.

Overarm Side Stroke.—The side stroke can be easily converted into the overarm side stroke by merely recovering the top or trailing arm over



FIGURE 17.—Side stroke—starting position, under arm extended beyond head; top or "trailing arm" extended with hand on thigh, legs extended and together.



FIGURE 18.—Side stroke—legs drawn up to start an inverted scissors; under arm has pulled to chest; top arm has recovered to the chest.



FIGURE 19.—Side stroke—legs separated and extended; bottom leg is forward, top leg is backward, top arm starting to push water, under arm beginning to recover.

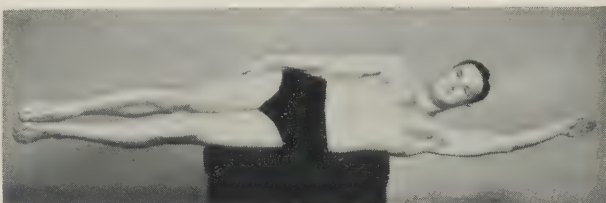


FIGURE 20.—Side stroke—legs have finished the "squeeze"; top arm has completed push of water from chest to thigh; under arm has finished recovery from chest to beyond head; body now in glide position.

the surface of the water instead of recovering underneath the water. This stroke is speedier than other forms of the side stroke and is well adapted to swimming in rough water.

Modification of Side Stroke for Towing or Carrying.—To use the side stroke for lifesaving carries or for towing equipment or materials, it is only necessary to pull the underarm with a wide, sweeping motion in a shallow, horizontal plane rather than in a deep, vertical plane as is the case in other side strokes in which the coasts or glides are taken (figs. 55, 56, 57, 58, 60, 61, 64, 66). Most swimmers prefer the inverted scissors kick rather than the standard scissors because there is



FIGURE 21.—Back stroke—starting position, legs extended, toes pointed, and arms extended with hands along thighs.



FIGURE 22.—Back stroke—legs drawn up, arms drawn up to shoulders.



FIGURE 23.—Back stroke—legs extended and spread apart, arms extended outward from shoulders. (Subject is tilted slightly for better view.)



FIGURE 24.—Back stroke—arms have finished pull from shoulders to thighs, legs have completed "squeeze," body now in glide position.

less danger of kicking the object or victim being towed.

Practice Drills.—The following practice drills are recommended:

1. Land drills on scissors kicks and arm movements.
2. "Bracket" drills in pool on leg kicks.
3. Cross pool kick glide drills.
4. Shallow water drills on arm movements.
5. Coordinated arm-and-leg movement drills on land, across pool, and lengthwise of pool.

ELEMENTARY BACK STROKE

Recent research by the Bureau of Medicine and Surgery reveals that swimming on the back is the safest position to assume if there is danger of depth-charge explosions. The elementary back stroke should be used in areas where there are likely to be repercussions from explosions of this type. This stroke is a good relief or "change over" style of swimming. It will not only allow tired muscle groups to rest, but will enable a man to make progress for a considerable length of time over a long distance if necessary. The elementary back stroke provides a restful means of swimming and is both a stroke of power and long endurance. The underwater recovery of the arms in this stroke makes it possible to swim more easily if one is fully clad. Beginners or mediocre swimmers usually find the elementary back stroke one of the easiest to master because of the simplicity of coordination of arm and leg movements. In addition, the face is always out of water; thus there is no breathing problem.

Frog Kick.—This kick is the one which should be used in the elementary back stroke; however, it is possible to use an inverted scissors kick. If a man shows a natural tendency to use the inverted scissors, it may be unwise to insist that he use the frog kick. The latter kick is divided into three movements. While lying on the back, legs together, and extended (fig. 21), on the count of one the legs are drawn up toward the waist with the soles of the feet in contact with each other (fig. 22). This keeps the legs in the same plane and the knees are turned out. On the count of two, the legs are separated and spread quite widely apart and at the end of the movement they are in an extended position (fig. 23). On the count of three the legs are "squeezed" vigorously until they come together in the original extended

position. At this point the glide or coast is taken (fig. 24).

Arm Stroke.—The arm stroke is relatively simple to learn. Starting from a position in which the arms are extended along the thighs (fig. 21), the arms go through the stroke in a paired movement. On the count of one, the arms recover by allowing the thumbs to travel up along the side of the body from the thighs up to the armpits (fig. 25). On the second count, the arms extend sideward and outward from the shoulders (fig. 26). On the third count, the arms sweep vigorously from the shoulders to the thighs, where they are held momentarily during the glide (fig. 27). The hands are kept beneath the surface of the water throughout the entire stroke.

Coordination of Arms and Legs.—Since the movements of the arms and legs are paired movements and accompany each other, the men should easily and quickly learn the coordination of this two-factor stroke. The starting position is that of legs extended and together. Arms are extended and along the sides of the body with the palms of the hands in contact with the thighs (fig. 21). On the count of one the legs are drawn up as the arms recover along the sides of the body (fig. 22). The thumbs of the hands travel along the sides of the body until they reach the armpit. On the second count, the arms are extended sideward and outward, and the legs separate and spread out until they are extended (fig. 23). The third count finds the legs vigorously “thrusting and squeezing” together as the arms pull strongly from the shoulders to the thighs. At this point the glide occurs (fig. 24).

Practice Drills:

1. Land drills on arm and leg movements.
2. “Bracket” drills on frog kick.
3. Shallow water drills on arm movements.
4. Cross pool frog kick glide drill.
5. Coordinated arm-and-leg movement drills on land, across pool, and lengthwise of pool.

BREAST STROKE

The breast stroke is probably the most suitable swimming stroke to employ in swimming any great distance over a period of hours without exhausting oneself. It is energy-conserving, yet it provides power and reasonable speed. The orthodox breast stroke is easily modified and made useful for any of the situations demanding swim-

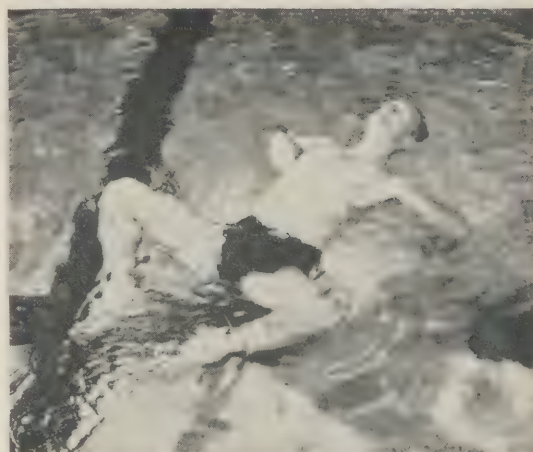


FIGURE 25.—Back stroke—legs drawn up, arms have recovered from thighs to shoulders.



FIGURE 26.—Back stroke—legs spread apart and extended ready to start “squeeze,” arms extended outward from shoulders ready to pull to thighs.

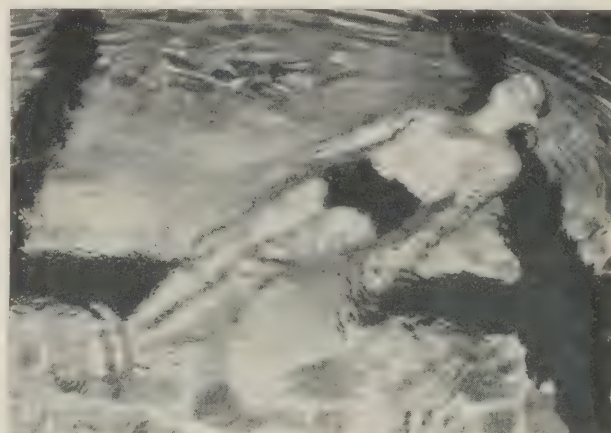


FIGURE 27.—Back stroke—legs have completed the “squeeze,” arms have finished pull to thighs, body is now in glide or coast position.

ming under water, swimming through oil or debris-covered water, swimming in extremely rough water, swimming with clothing on, pushing a shipmate along in a tired swimmer’s carry, or swimming so as to hold materials or weapons out of the water. It enables a man to swim with his

head high out of the water thus aiding him to ascertain and maintain his bearings.

Frog Kick.—This kick is executed in three movements. The first movement is that of drawing up of the legs toward the waist with the soles of the feet together, knees separated and turned out, and legs in same plane (fig. 29). The second movement consists of the extension of the legs outward with the lower portion of the leg, from the knee down, rotating outward. The legs then push the water and spread apart as wide as feels comfortable. At the end of the spreading movement the legs are in an extended position. The final

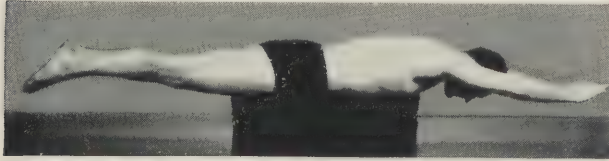


FIGURE 28.—Breast stroke—starting position, arms extended beyond the head, legs together and extended, head dropped down between upper arms, while exhalation takes place.



FIGURE 29.—Breast stroke—arms have completed pull from extended position beyond head to shoulders and are beginning to start their recovery under the body; legs have been straight during the arm pull and are just beginning to draw up toward the waist.



FIGURE 30.—Breast stroke—arms and hands have recovered to the chest while the legs have completed their drawing movement and are now ready to spread apart and “squeeze” the water.



FIGURE 31.—Breast stroke—arms have recovered from chest to the extended position beyond the head, legs have just finished the movement of spreading and “squeezing,” and the glide is now taken.

movement is the “thrust or squeeze” of the legs in which they give the water a vigorous whip resulting in forward progress of the body. At the end of the thrust phase of the stroke, the legs are extended and merely relax and rest while the body glides on the momentum of the previous kick (fig. 31). Instructors will find that it helps to teach the frog kick by establishing a cadence through calling words or numbers such as: “Draw-Spread-Squeeze,” or “Draw-and-Squeeze,” or “Draw-and-Whip,” or “One-Two-Three.” Have the entire group practice the kick together in unison to the rhythmic chanting of cadence by the instructor.

Arm Movement.—The arms work in a paired movement and are kept on the same plane throughout the pull and recovery. Starting from a position in which the arms are extended in front of the head (fig. 28), the arms pull backward and somewhat downward in the water until they are back as far as the shoulders (fig. 29). Next, the arms are brought to a position under the chest or abdomen where the two hands come together palm to palm (fig. 30). The final recovery movement merely consists of sliding the two arms forward together until they can reach the extended position out in front of the head. At this point the arms relax and rest momentarily while a glide is taken (fig. 31).

Coordination of the Arm Stroke with the Leg Kick.—The first phase of the coordination movement is that of the arms pulling from the extended position in front of the head downward and backward as far as the shoulders (fig. 29). The legs are still extended to the rear and rest during this phase. During the second phase, the arms recover to the chest while the legs draw up (fig. 30). In the third phase of the coordination the legs spread and squeeze during the time that the arms recover from under the body to the extended position in front of the head. Finally,

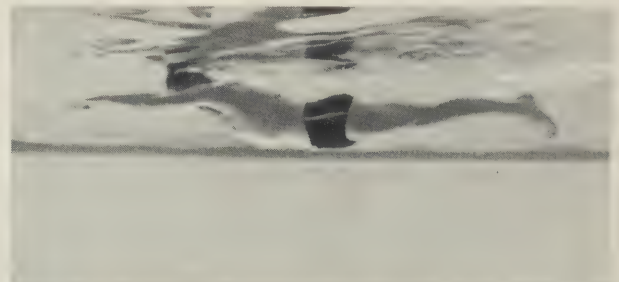


FIGURE 32.—Breast stroke—arms and legs extended, body is in glide position, exhalation taking place—underwater view.

the fourth phase consists of gliding or coasting in a streamlined position with the legs extended and together at the rear, while the arms are extended in front of the head (fig. 31). The head is dropped down between the arms during the coast and the exhalation takes place under water (fig. 32).

Breathing.—Although it is possible to swim the regular breast stroke with the head held high above water at all times to get the needed amount of breath, it is considered good form to breathe rhythmically throughout the entire stroke. The head is lifted up slightly to allow the mouth to inhale air while the arms start their pull from the head to the shoulders. During the second phase of the coordination, the head is slowly dropped into the water again and the exhalation begins and is completed during the recovery portion of the arm stroke.

Practice Drills.—The following practice drills are recommended:

1. Land drills on frog kick and arm movements.
2. "Bracket" drills in pool on frog kick (prone).
3. Cross pool frog kick glide drills.
4. Shallow water drills on arm movements.
5. Cross pool drills—arm strokes only, while legs are supported by buoys.
6. Coordinated arm-and-leg movement drills on land, across pool, and lengthwise of pool.

SPEED STROKES (CRAWL, TRUDGEON CRAWL, AND BACK CRAWL)

Detailed descriptions of these three swimming strokes are not included in this consideration of the different styles of swimming. In general, the Navy man is not interested in speed swimming. It is recognized, however, that there might be occasions where rapid swimming is necessary for



FIGURE 33.—Breast stroke—arms have completed pull and are beginning to recover, legs are drawing up, body semi-vertical—underwater view.



FIGURE 34.—Resting back stroke—arms ready to pull, legs spread apart—underwater view.



FIGURE 35.—Human stroke or "dog paddle"—right arm extended ready to start pull, right leg has completed downward kick, left leg is ready to beat downward, left arm has completed pull and is ready to recover—underwater view.



FIGURE 36.—Side stroke—semivertical position, legs extended and together, top arm extended with hand on top of thigh, under arm extended forward beyond head, glide being taken—underwater view.



FIGURE 37.—High semivertical breast stroke.



FIGURE 38.—Indoor installation for abandoning ship drills.

short distances, such as: (a) Swimming to floating debris, (b) to catch up with a life raft or boat, and (c) to get away from a sinking ship. It also might be necessary to swim across or against a rapid current. Other strokes are considered to be more satisfactory, however, because in them, the arm recoveries are underwater. This is an important consideration for the man partially or fully clad, or who may be wearing a life jacket, rubber lifesaving suit, helmet, or heavy clothing. In the crawl stroke the arms are lifted out of the water during the recovery phase of the stroke and the weight of heavy water-soaked clothing will interfere with the movement and also have a tiring effect on the swimmer. Likewise, clothing, jackets, and rubber suits will hamper the freedom of movement required in this stroke.

Crawl.—In this stroke there is an alternate reach, catch, and pull, along with an overwater recovery of the arms. The legs alternately thrash up and down in an undulating movement (flutter kick); that is, the power of the kick travels progressively from the hips downward, the feet acting like the lash-end of a whip. The feet are extended and are "pigeon toed." Breathing takes place during each cycle of the arms, exhaling occurring while the head is in the water.

Trudgeon Crawl.—This stroke has an arm movement similar to that in the crawl. The leg movements consist of a flutter kick combined with a scissor kick during each cycle of the arms. The body rolls slightly from the prone position to the side as the arm on the breathing side is recovered and inhalation takes place. A scissor kick is executed as the body rolls from prone position to the side, and as the inhalation is taken.

Back Crawl.—There is an alternate catch, pull, and recovery of the arms in the back crawl, accompanied by the flutter kick. The hips are kept quite high, head laid back well in the water, and chest high. Breathing is no problem because the face is up.

UNDERWATER SWIMMING

The ability of a Navy man to swim with confidence and skill under the surface of the water may mean the difference between his life and death. Mastery of this technique may make it possible for him to avoid surface hazards of various kinds, such as floating debris, heavy, thick oil, or even flaming oil. Underwater swimming offers protection against strafing. It has

lifesaving value in that it makes it possible to submerge and rescue a shipmate who has gone beneath the surface. There also are occasions when it is necessary to recover articles which have gone overboard in comparatively shallow water.

Breath Control.—The development of the respiratory and circulatory systems of the body to the highest degree of efficiency is necessary if men are to secure the most out of underwater swimming. Much of this can be accomplished on land in deep breathing exercises which will tend to develop the lung capacity. Such drills as inhaling deeply and holding the breath on land for increasingly longer periods of time will aid in achieving greater proficiency later in underwater swimming.

A drill which may be given early in teaching the skill of underwater swimming is to submerge beneath the surface and hold the breath for 30 seconds the first time; then attempt to hold it for 45 seconds the second time, 1 minute the third time, etc. Competition can be inserted into this drill by seeing which man can hold his breath for the longest period of time. Rhythmic breathing exercises such as bobbing up and down in the pool are also good preliminary training for underwater swimming.

Before the performer plunges or jumps into the water he should take several deep breaths through his mouth, for a period of a minute or more, to ventilate the lungs thoroughly and to build up an abundant supply of oxygen in the body. At the end of these deep breaths one ought to feel slightly dizzy and faint headed. Just prior to plunging in the man should take just slightly more than normal breath. The inhalation of too much air will have a tendency to make the individual feel uncomfortable underwater and he will desire to expel all of the air from his lungs in one big exhalation. As a man swims underwater he should consciously avoid allowing any air to escape either from the mouth or nostrils. A method which seems to work quite well is to go through the act of swallowing without opening the mouth or letting any air out of the nose.

Torpedo Breast Stroke.—This stroke is probably the most efficient of all the styles of underwater swimming. However, it should be used only in clear water where the full swimming stroke can be employed, with the arms coming all the way from beyond the head down to the thighs.



FIGURE 39.—Outdoor installation for abandoning ship drills.

It seems to be the most powerful and energy-conserving of any of the underwater strokes.

The arms, in a paired movement, make a full sweep from an extended position in front of the head down to the thighs. After the hands come in contact with the thighs the coast or glide is taken. As the arms recover from the glide position to the extended position beyond the head, the legs draw up and spread apart as in the regular frog kick. As soon as the hands reach the extended position beyond the head they immediately start the full sweep back toward the thighs. While the arms are doing this the legs are "squeezing" together. In the glide position the legs are extended to the rear and are together. It is important to keep the head down so that the chin is resting against the chest. Generally, the eyes should be kept open while swimming underwater.

Conventional or Orthodox Breast Stroke.—Since the glide in the regular breast stroke is taken with the arms extended forward, this stroke is recommended for underwater swimming where there may be danger of running into an object. Men who have previously learned the coordination of the regular breast stroke may have difficulty in learning the new coordination of the torpedo breast stroke. If this hinders their progress in making distance underwater, it may be best to allow them to use the orthodox stroke.

Paired Movement of Arms (as in Breast Stroke) and Flutter Kicks.—For men who have learned the crawl stroke previously and have a good flutter kick, it may be best to allow them to pull with a wide sweep of the arms, and use a flutter kick. The arm stroke will resemble the breast stroke while the leg kick will be an alternate up and down kick from the hips.

Human Stroke or Modification of "Dog Paddle."—Another stroke for underwater swimming is one employing alternate reaching and pulling of the arms as in the beginner's human stroke, along with a slow alternate up and down movement of the legs. This stroke may be modified further by using the frog kick or a scissors kick with the alternate reaching and pulling of the arms. Any such reaching and pulling arm movement is advantageous because it offers protection to the swimmer's head as there is always one hand reaching out in front of him which offers protection.

Modified Side Stroke (Joint Arm Action).—Still another type of underwater swimming stroke is a side stroke in which the thumbs of the hands are clasped, fingers together and extended with the hands and arms pressing the water in a sweep from the shoulder to the thigh. As the legs are drawn up toward the waist from the extended position, the two hands and arms acting as a single unit recover from the thigh to the shoulder. In a joint motion the hands and arms now sweep from the shoulder to the thigh as the legs spread apart and deliver a vigorous "squeezing" movement.

Many men who have previously learned the side stroke will learn this stroke easily.

Additional Underwater Swimming Suggestions.—Many men will never swim the torpedo breast stroke or the regular breast stroke, using a correct frog kick. The instructor should not stress form too much. If a paired arm movement is used with an inverted scissors kick rather than with the usual frog kick, the instructor should not attempt to change the man's style.

Swimming underwater is so important that drills should be held each time the group meets. Men should be encouraged to better their distance in swimming underwater each time they try it. Swimming underwater for distance will stimulate interest in this activity.

WATER ENTRANCE AND SURFACE DIVING

In addition to knowing how to keep afloat and to use fundamental swimming strokes, the blue-jacket also should be acquainted with ways of entrance into the water from heights above it, as well as with methods of descending below the surface once he is in the water. This information will be of value to a man in case it is necessary to abandon ship. He might have to jump from the deck, drop from a line, ladder, or net, or after he is in the water, he may find it necessary to submerge to avoid floating debris, flames on the surface, heavy oil, or strafing. Also, this latter information will be valuable in lifesaving and recovering objects in relatively shallow water.

ENTRANCES INTO THE WATER

The jumps which are described generally can be practiced from a running or standing position and in most cases may be taken from varying heights.

1. **Stride Jump.**—The legs are spread and held apart as in a running stride position. The upper



FIGURE 40.—Jumping from low level with jackets.

part of the body is angled forward slightly and arms are extended sideward, shoulder height. This type of jump prevents deep submersion and is most effective if taken from a near surface level with a running start.

2. Feet Foremost Jump with Arms Over Head.—The feet are together and extended with knees locked. Arms are extended over the head with biceps touching ears. In this jump a man may rise to the surface quickly by sweeping the arms in a paired movement from the extended position above the head down to the side of the body.

3. Feet Foremost Jump with Arms Extended Close to Side of Body.—The feet are together and extended with knees locked. Arms are extended and close to the sides of the body with hands touching the thighs. In this jump a man may descend deeper if necessary by sweeping the arms in a paired movement upward from the thighs to an extended position above the head.

4. Feet Foremost Jump, Grasping Nose.—Legs are together, extended, and held straight. Upper body is kept upright with one hand grasping nose. This jump may be varied by having one hand shield the eyes while the other grasps the nose and covers the mouth as would be necessary in jumping into water covered with flaming oil.

5. Tuck or Splash Jump.—The shins are grasped just above the ankles, head dropped forward until chin touches chest, legs drawn up until knees touch head. This position is taken in the air after a running or standing take-off. Attempt should be made to contact the water with the buttocks, thus creating a water splash which might aid in separating heavy oil or flames on the surface.

6. Head Foremost Dive.—This dive may be executed from a running or standing position. The arms are extended above the head, legs are together in an extended position to the rear. To keep the dive shallow, the head should be lifted and the back arched as much as possible. The head-first dive generally is not recommended unless it is necessary to make a quick get-away from a beach, pier, raft, or ship into water which is not congested.

SURFACE DIVES

The two types of surface dives given consideration are (a) feet foremost, and (b) jackknife. Only one description of each is included.

1. Feet Foremost Surface Dive.—The starting position of a feet foremost surface dive necessitates the body being in a vertical position in the water with the arms along the sides of the body and hands touching the thighs. A deep breath is taken prior to submerging, the palms of the hands are turned outward, and the arms, in a paired movement, make a sweeping motion to the extended position above the head. This dive is especially valuable when it is necessary to submerge quickly from a vertical position in the water.

2. Jackknife Surface Dive.—This surface dive is executed from a prone position by suddenly dropping the head until the chin touches the chest, bending at the waist and sweeping the hands sideward and backward in a paired movement as in the breast stroke. The legs are kept straight and extended throughout the dive. After the arms have swept backward the palms of the hands are reversed and the arms then immediately sweep forward toward the head. This movement helps to lift the feet upward. The jackknife dive is used for submerging from prone position while swimming as in the breast stroke.

II. FUNCTIONAL SWIMMING DRILLS

It is not to be assumed that all bluejackets will master each of the different strokes in swimming. Time and facilities will not permit this. It is anticipated however that men will learn how to stay afloat and be able to swim well, using one or two of the standard swimming strokes. The skills connected with methods of staying afloat and the common swimming strokes have already been discussed. The purpose of this section is to present ways in which these fundamental swimming skills may be adapted or modified to meet the needs of naval personnel.

GENERAL DRILLS

In general, these drills will consist of short demonstrations by the instructor followed by group participation. Obviously, there will be less instruction needed than when the fundamental swimming skills were being taught. The drills should be characterized by plenty of action and practice.

1. Keeping Afloat in Restricted Areas.—In disasters at sea the men's first objective generally is to get away from the sinking ship or out of the danger area. Following that, all that can usually be done is to keep together and stay afloat by expending the least possible amount of energy, and await rescue. Men can best do this by floating, treading, sculling, treading and sculling combined, flutter back sculling, the resting back stroke, or the dog paddle.

Drills should be conducted with and without clothing, with clothing and life jackets, and should include large numbers of men in deep water at one time. The length of time men are required to stay afloat should be increased from session to session.

2. Semivertical Swimming.—In rough water, congested areas, oil-covered water, debris-laden surfaces, swimming with equipment, looking around for help, judging oncoming waves or maintaining proper direction, a high semivertical breast stroke is probably the best to use (fig. 37). In order to keep the head high above the surface the arms make short pulls downward, the legs kick in a strong continuous action, using either a frog kick or an inverted scissors kick (fig. 33 and 37).

The side overarm or the regular side stroke (fig. 36) are two more strokes which may also be modified to keep the head held high. The legs are dropped downward in the water until the body is at an angle of about 45° with the surface. Legs may execute either an inverted or standard scissors kick. Head and face should be lifted clear of the water.

The human stroke or "dog paddle" is another possibility for keeping the head well above the surface of the water. It may be used to advantage by poor swimmers who are supplied with life jackets. Since the arms remain below the surface throughout the pull and recovery it is relatively easy to hold the head quite high above the surface (fig. 35).

Group drills may be held in the water with and without clothing, with clothing and jackets, and

with men carrying equipment such as helmets and rifles. The men should be encouraged to swim with the stroke which is the easiest and most natural to them. Many races and relays can be devised which will add interest and develop a competitive spirit.

3. Silent Swimming.—There are times when swimming silently may be necessary. Tactical assignments or swimming without attracting attention might require noiseless use of the limbs. To swim without making a splash the semivertical breast stroke is recommended (fig. 33). However, the side stroke (fig. 36) or elementary back stroke (fig. 34) may also be used effectively. Regardless of the stroke used, the body should be kept low in the water and the stroking movements should be slowly and carefully made. Neither hands nor feet should break the surface.

Drills should be held with and without clothing, with jackets and clothing, with various types of equipment. Men should practice over increasingly longer distances until a correct and comfortable position is found in which the arms and legs stroke noiselessly. If possible "black out" swimming drills should be held.

4. Splash Recovery Swimming.—This variation of the breast stroke might prove to be useful in swimming through debris or burning light oils. The breast stroke is altered by having the hands push a fan of water forward and somewhat to the sides while the arms are making their recovery. The body is in a semivertical position. The effect of splashing water ahead of the swimmer is to clear a path through the burning area.

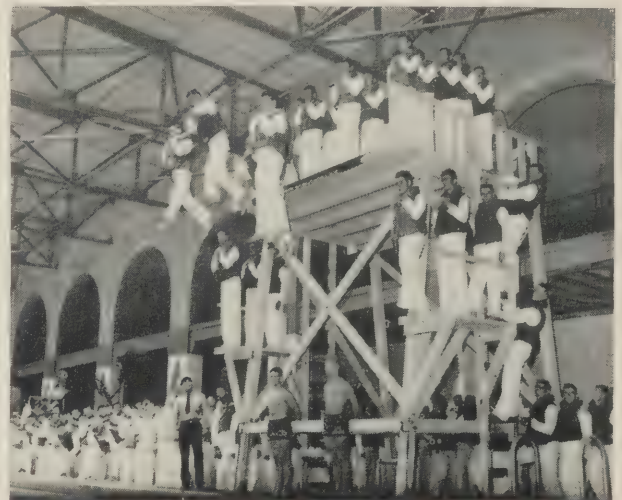


FIGURE 41.—Jumping from high levels with jackets.

Drills should be held with and without clothing, and with jackets and clothing. Various formations, such as single file or two or three men abreast might be used.

5. Swimming with Limited Use of Limbs.—

An injury, either to one or both arms or legs or to a shoulder or hip, may render the injured member useless. It is most important, therefore, that Navy men have the ability to swim when they might be thus incapacitated or occupied. There also might be occasions when one or both hands would be occupied, such as towing or pushing, carrying equipment, or rescuing a shipmate (figs. 50-66, inclusive).

In swimming with the legs only, the frog kick or inverted scissors probably is most desirable. If the arms are to be used exclusively, a sculling movement of the hands, with the body in a vertical position or sculling on the back in a horizontal position, is the most practical method to be employed. The side stroke, with a shallow horizontal pull of one arm, and the scissors kick, will be used most when one arm is disabled or engaged as in a tow or carry. In swimming forward with a rifle and pack a man ought to use a modification of the vertical breast stroke. One arm would thus be engaged carrying the rifle while the other is employed in pulling. Either the inverted scissors or frog kick could be used.

Drills should be held with and without clothing, with jackets and clothing, with rifles, packs, and materials that may be pushed or towed. Arms or legs could be immobilized for practice drills. Competition races and relays also may be held.

6. Swimming Beneath Oil, Flames, or Debris.—It is possible that men in the Navy may find it necessary sometimes to jump directly into or submerge beneath flames or floating debris. In that event a practical knowledge of methods of jumping, surface diving, and underwater swimming (pp. 38-42) will be invaluable.

If one has to jump into oil or flames, generally it is best to jump to windward, feet foremost, grasping nose and covering mouth with one hand, while the eyes are covered with the other hand. A fairly deep breath should be taken prior to the jump. By grasping the nose and covering the mouth and eyes, air is prevented from escaping and the face is protected from flames or heavy oil. Men should be cautioned not to wear kapok jackets or inflated life belts when it is necessary to jump in

and swim underwater. It is extremely difficult to remain beneath the surface if such a belt or jacket is worn. Clothing, however, should be worn as it is a protection against the flames or debris.

When it is necessary to come up for another breath, the swimmer should look up, extend his arms above his head, and pull them in a wide, vigorous sweep which will aid him in coming to the surface. This will enable him to force the upper part of his body above the surface at which time the hands and arms make wide, sweeping movements across the surface to splash the water thus driving away the flames momentarily, and allowing the man time to breathe. As he comes to the surface he should endeavor to turn his back to the wind before the next breath is taken. If necessary to come up through thick, heavy oil, which is not ignited, it is obvious that the nose, mouth, and eyes should be protected with the hands as much as possible when the surface is broken. After the inhalation is taken, the man submerges again by using a feet foremost surface dive (p. 42). He then takes another lap underwater using the same previous procedure until necessary to break the surface again for another breath of air.

Instructors should be cautioned not to have the men practice jumping into and swimming under actual flaming surfaces. Rather, the drills should consist of jumps from various heights, with and without clothes, with deflated lifebelts (no kapok jackets), swimming underwater, holding the breath, coming up to the surface using both arms in a wide, sweeping and splashing movement, inhaling quickly, and submerging again.

III. ABANDONING SHIP DRILLS

Since exact instructions to be followed in abandoning ship will vary and be subject to the orders of the commanding officer of each ship, no attempt is made here to present definite or specific procedures. At all naval establishments, however, equipment should be available and drills held on techniques that may have practical application in the event of an emergency. In this chapter there are several illustrations of approved equipment for both outdoor and indoor installation. It should be noted that they include: (a) Decks of different heights; (b) cargo nets; (c) hausers or lines; (d) ladders; (e) buoys; and (f) wooden and rubber life rafts (figs. 38-45, inclusive).

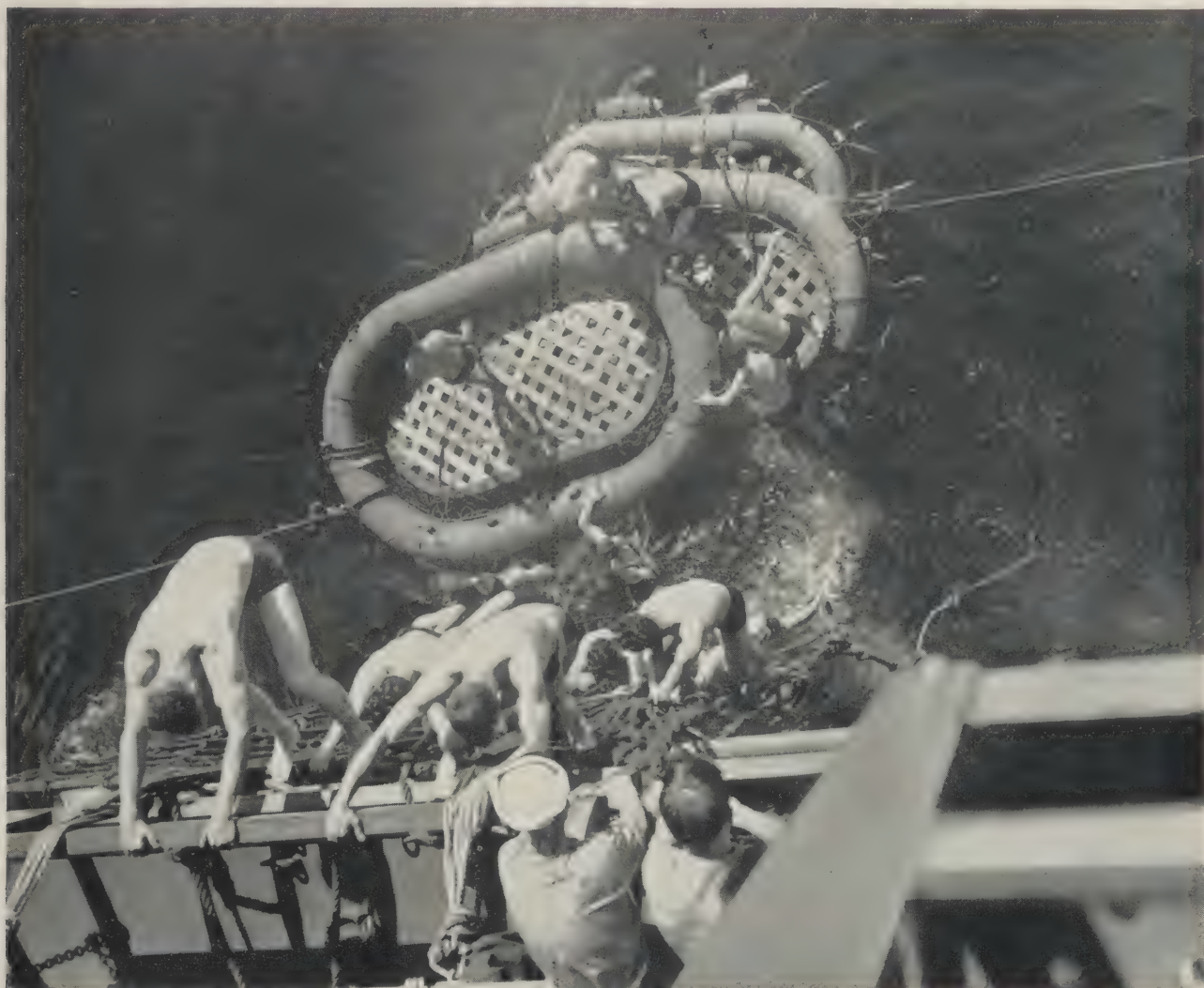


FIGURE 42.—Abandoning ship drill.

The following abandoning ship drills are among those that are most practical. When life jackets or life belts are used these drills should be practiced by nonswimmers as well as swimmers. They do not necessarily have to be followed in the order in which they are presented. In fact some of the drills may not be adaptable to the program at various naval establishments.

1. Feet Foremost Jumps.—All jumps as described on pages 41–42 can be practiced from various heights: (a) With and without clothing; (b) wearing various types of life jackets and life belts; (c) holding helmets; and (d) holding life jackets. The jump may be started from running and standing positions. It should be noted that, in jumping while wearing kapok or cork life jackets, they are held down by grasping the front

with both hands (figs. 39, 40, 41). This is done to prevent the jackets from sliding up over the head or injuring arms, neck, or chin of the jumper when he strikes the water. Steel helmets should not be worn when jumping from heights because the chin strap may choke the man when the helmet hits the resisting force of the water.

2. Cargo Nets.—Proper method of climbing up and down cargo nets: (a) With and without clothing; (b) wearing clothing and life jacket or life belt; and (c) fully clad with rifle and pack.

3. Hausers or Lines.—Ascending and descending hausers or lines: (a) Using hands and feet combined; and (b) with hands alone. These drills may be used (a) with and without clothing; (b) with clothing and life jackets or life belts; and (c) fully clad with rifle and pack.



FIGURE 43.—Jumping and descending lines into water.

4. Ladders.—Climbing up and down ladders: (a) With and without clothes; (b) with clothes and life jacket or life belt; and (c) fully clad with rifle and pack.



FIGURE 44.—Jumping into water with rubber lifesaving suits.



FIGURE 45.—Life rafts for indoor drill.

5. Life Rafts.—Methods of climbing in and out of life rafts including: (a) Aiding an injured shipmate to get into the raft; (b) how to properly secure one's self to the raft; and (c) towing or pushing a life raft (figs. 42 and 45).

6. Leg Cramp Release.—Sudden and violent movements in the water or prolonged periods of swimming may develop muscular cramps in the legs, especially in the arch of the foot and the calf of the leg. If cramps do occur, the man should calmly take and hold a deep breath, assume a jelly-fish float position, and slowly and vigorously massage or knead the cramped muscle. If a foot cramp occurs when a man is wearing shoes it is obvious that the shoe will have to be removed. Men should practice this technique with and without clothing in deep water.

7. Grass or Seaweed Disentanglement.—If a swimmer finds himself in an area in which progress is difficult because of excessive grass or seaweed, a slow crawl stroke is most effective. Since the recovery of the arms is over water in this stroke, there is more opportunity to shake loose from such entanglements. In the event a man does become ensnared he should extricate himself by gentle, wave-like, shaking movements of the limb involved.

8. Removal of Clothing.—As much clothing as practicable should be kept on when one is forced into the water because it will help protect the body against the cold, flames, or floating debris, as well as against the rays of the sun if one is aboard a life raft. Light clothes, especially, will aid somewhat in keeping a man afloat for a period of time because of air caught in them during the



FIGURE 46.—Trouser inflation—a satisfactory float.

jump into the water. Trousers, when removed and inflated properly, make very satisfactory floats (fig. 46).

If it is necessary to remove clothing while in the water the heaviest articles should be taken off first. Shoes should be removed by the swimmer first taking and holding a deep breath, then going into a jelly-fish float position, and finally untying and taking off the shoe. After the shoes are removed a back float position is assumed, trousers are unbuttoned and slid down over the hips. The man can then flutter kick out of them. Another possible method of trouser removal is that of assuming a jelly-fish float position and slipping trousers down over the legs. The last article of clothing to be removed is the shirt or blouse.



FIGURE 47.—Grasping waist of trousers for inflation.



FIGURE 48.—Flipping pants for inflation.

Drills consist of (a) jumps into the water fully clothed, with and without life jackets and life belts; (b) removal of and securing shoes to life jackets or life belts; (c) complete disrobing when swimmer is not wearing life jacket or life belt.

9. Flotation Gear.—Many different articles will support a man in the water and he should be continually on the lookout for such things as planks or spars, wooden boxes or crates, oars, tin cans, pails, shell or projectile cases, ammunition



FIGURE 49.—Jumping with trousers for inflation.

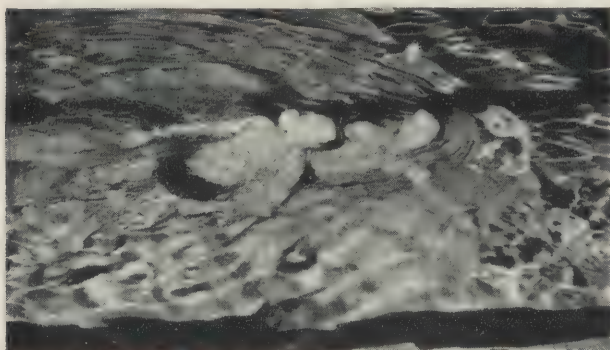


FIGURE 50.—Rear approach—rescuer has approached victim from rear and is contacting victim's chin with his hand prior to leveling off the man. The rear approach is the safest to use.

cans, mattresses, discarded life jackets, ring buoys, and the like.

If no other means of support is available, temporary buoys can be improvised from one's clothing. Shirts may be inflated by securing the cuffs and collar, opening the second button below the collar, and blowing air into the opening. Another method is to remove the shirt while treading water and spread it out on the surface. One side of the shirt then may be lifted and quickly capped thus confining a large amount of air. The edges of the shirt are then gathered and held underwater. If more air is needed the swimmer may submerge and blow breath into the opening.

Trousers of duck or khaki make better buoys than shirts. After they are removed float them on the surface with the fly turned up. Tie a single knot at the end of each trouser leg. It is better if the lower two or three buttons of the fly of the pants are secured. Grasp one side of the waist of the trousers with each hand (fig. 47) and work them around on the surface until they are in back of the head and neck. Now flip the trousers over the head and bring the waist opening

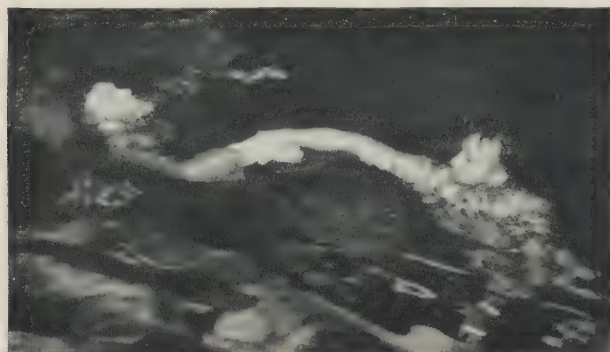


FIGURE 51.—Front surface approach—the rescuer is contacting the victim whose eyes were beneath the surface of the water. victim's right wrist is grasped by the rescuer's right hand prior to being turned around. This scene also illustrates the beginning of a wrist tow.

smartly down on the surface thus trapping a good pocket of air in each trouser leg (fig. 48). Gather in the portion of the waist underwater and hold it with one hand. Mattress covers, sea bags, laundry bags, pillow cases, and sugar or flour sacks may also be inflated by capping the openings on the surface. These, as well as trousers, may be held by their open ends in back of the shoulders and inflated as a jump is taken (fig. 49). Just before the man hits the water they are swung overhead and capped on the surface.

Practice drills on land and in the water should consist of a (a) clothing inflation; (b) putting on and removing various types of life jackets and life belts; and (c) inflation of pillow cases, bags, mattress covers, etc.

10. Additional Suggestions.—It is possible to combine jumping and climbing drills as follows: (a) "Up the ladder and jump"; (b) "Up the cargo net, and down the line"; (c) "Up the line and down the cargo net"; etc. Likewise, each method of descending from the deck into the water may be combined with previously learned swimming skills such as various swimming strokes and underwater swimming, treading, etc.

Emergency entrances into the water also may be used as preliminary to, and as parts of: (a) Drills with life rafts; (b) attaching one's self to floating debris; (c) cramp releases; (d) removal and inflation of clothing; (e) inflation of other items; (f) putting on and removing life jackets or life belts. These drills also may be made competitive if they are run as races, relays, or obstacle swimming events.

IV. RESCUE DRILLS

This phase of swimming instruction deals with various methods by which one man may rescue another. In most cases the more advanced swimmers only will be the ones who will become very proficient in lifesaving skills. This does not mean, however, that the average, or even the poor swimmer, cannot benefit by some instruction in rescue methods.

The more common approaches, carries, and breaks are presented and one method of artificial respiration is mentioned. In view of the time allotted to swimming instruction it is realized that not all of these rescue methods can be taught. They should, however, serve as a guide or source of information from which the more important skills may be selected.

APPROACHES

It is important for the rescuer to avoid being grasped by the victim when making contact with him. There are several different methods for safely approaching the man who is to be towed or carried.

1. Approaching Victim From Rear.—It is safest to contact a victim from the rear because he will be unable to watch the movements of the rescuer and there is less chance of the latter being caught in a dangerous grip or hold.

The rescuer should approach the victim, keeping his head up out of the water and eyes on the man. When within an arm's length of the victim's back the rescuer quickly reverses his body position so that he is on his side. Making a cup out of the palm and fingers of his hand he places it around the victim's chin and begins the process of leveling off the man (fig. 50).

2. Approaching Victim From Front on Surface.—If it is impossible to approach a victim from the rear, and the rescuer has made certain that the former's eyes are beneath the surface, then this approach may be safely employed. With the eyes submerged, the victim is unable to watch the movements of the rescuer and thus is less likely to interfere with the latter as he contacts him.

Approaching the victim with the head held high the rescuer swims until he is close to him. Executing a quick reverse, the rescuer, with his right hand, grasps the top of the victim's right wrist (fig. 51), or vice versa. The rescuer's hand pulls the victim around so that the latter's back is in front of the former. Now the rescuer cups the victim's chin with his free hand. After the chin is firmly engaged, the rescuer's hand, which had grasped the victim's wrist, is released and begins stroking to level off the victim.

3. Approaching Victim From Underwater.—In situations in which it is impossible to approach a man from the rear, and the victim's head and eyes are above water, it is safest for the rescuer to submerge and contact him underwater. This method will eliminate the danger of the rescuer being grasped by a violently struggling and panicky victim who would be able to watch and interfere with the former in his rescue attempts, were they made on the surface.

Having decided to use this method of approach to the victim, the rescuer swims to a point 8 to 10 feet distant from him. He now surface dives,



FIGURE 52.—Underwater approach—approaching victim whose head was above the surface of the water; rescuer surface dived and swam underwater to level of victim's feet; rescuer is contacting victim's legs and just starting to turn him around—underwater view.

head foremost, and swims underwater to the level of the victim's feet. Contacting the victim's lower legs, the rescuer places one hand in front of one shin, and the other hand in back of the calf of the opposite leg of the victim (fig. 52). Keeping contact with the victim's legs, the rescuer quickly turns the former around until the calves of the legs of the victim are directly in front of the rescuer's face. The rescuer then quickly follows up the back of the victim and contacts his chin with his cupped hand. The process of leveling off the victim and placing him in the proper carry begins.

5. Approaching a Tired Swimmer.—To give help to a shipmate who may be quite tired, but who is by no means panicky, completely ex-

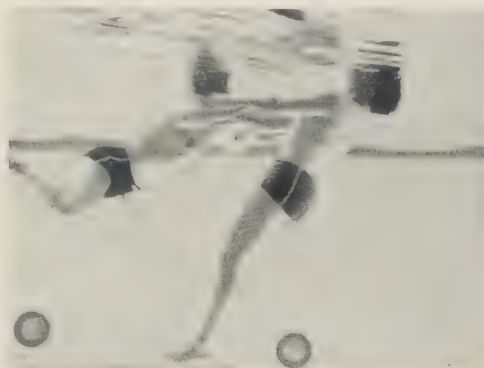
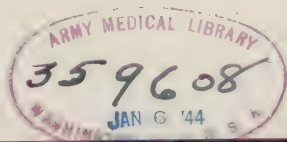


FIGURE 53.—Tired swimmer's approach—rescuer on the left is shown starting the approach and contact of a tired swimmer. The tired swimmer is told to place his hands on rescuer's shoulders, lie on his back, and spread his legs apart. Rescuer is shown swimming a modified breast stroke, using a slow frog kick—underwater view.



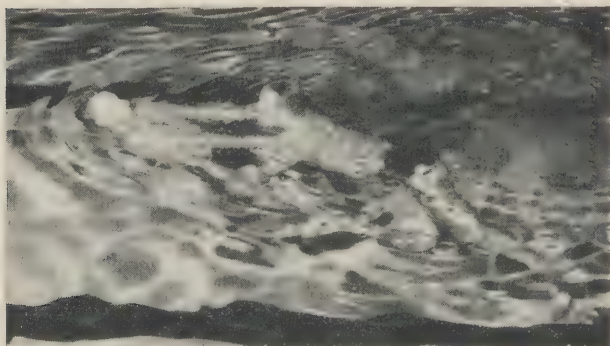


FIGURE 54.—Tired swimmer's carry—rescuer on the right is shown pushing the victim who is lying on his back and who has placed his hands against rescuer's shoulders. The rescuer swims with a slow, easy, modified breast stroke, using a frog kick.

hausted, or violently struggling, the tired swimmer's approach may be used. The rescuer should be absolutely certain, however, that subject is a "tired swimmer" and nothing else. The rescuer can talk to him to establish this fact in his own mind.

The rescuer approaches the subject face to face, gives him the following commands which the latter obeys: "Place your hands on my shoulders." "Keep your arms straight." "Lie on your back." "Spread your legs apart." "Watch my face." The subject is now pushed by the rescuer in a tired swimmer's carry (figs. 53 and 54).

LIFESAVING CARRIES

Most lifesaving carries are based upon previously learned swimming skills. Standard strokes are merely modified to make them adaptable to lifesaving use.

1. Chin Pull.—As explained in the discussion of approaches, the chin pull is used primarily for leveling off a victim prior to placing him in a more secure type of carry. However, it is pos-



FIGURE 55.—Chin pull—rescuer grasps victim by the chin, cupping the hand firmly over the chin. The rescuer's forearm is held firmly against the shoulder and close to the neck of victim; used to level off a man.

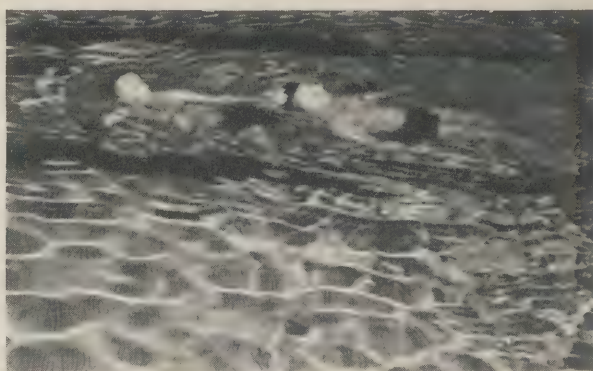


FIGURE 56.—Hair carry—rescuer on the left is shown towing victim by the hair. Rescuer keeps the towing arm straight and uses opposite arm to swim with while lying on his side, executing a scissors kick.

sible for a rescuer to carry a victim a short distance by this method.

Reaching over one of the shoulders of the victim from the rear, one of the hands of the rescuer in a cupped position is placed over the victim's chin (fig. 55). The forearm of the rescuer is placed firmly against the victim's neck and shoulder, forming a lever which aids in the leveling off process. The rescuer swims on his side behind the victim using a shallow, horizontal arm pull along with a standard or reverse scissors kick.

2. Hair Carry.—This is one of the easiest carries for a swimmer to learn. The rescuer is a full arm's length away from the head of the victim. After the victim has been leveled off by means of a chin pull his hair is grasped by the free hand of the rescuer who keeps this arm straight and the elbow locked (fig. 56). This is the same hand which was stroking during the chin pull. After the hair is firmly grasped the opposite hand is released from its hold on the chin and begins stroking with a shallow, horizontal pull. A standard or reverse scissors kick may be used.

3. Collar Carry.—This is similar to the hair carry except that the back of the collar or blouse is grasped instead of the hair. This will enable the victim to still wear his helmet if necessary. It can be used most effectively on victims who are fully clad and should be of considerable value to Navy men. The victim should be leveled off by means of the chin pull. The collar of a coat or blouse of a man can be grasped directly behind his neck by the free hand of the rescuer who keeps this arm straight with elbow locked. After the collar is firmly grasped the opposite hand is released from the chin of the victim and begins stroking with a shallow, horizontal pull. A re-

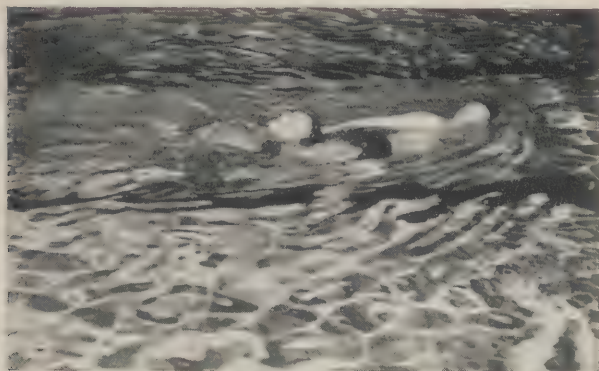


FIGURE 57.—Collar carry—rescuer on the right shown carrying a fully clad victim by grasping victim's coat collar just behind the neck. Rescuer swims a slow, easy side stroke.

verse scissors kick is recommended. A man who has had little or no practice in correct lifesaving methods may make use of this carry to rescue a fully-clad shipmate. In doing so, he should swim up behind the victim and immediately grasp the collar of his blouse, coat, or life jacket without first having leveled off the man by means of a chin pull (fig. 57).

4. Cross Chest Carry.—This carry may be used advantageously by a rescuer if he is an excellent swimmer and has had thorough lifesaving training and provided the distance involved is not too great. It is one of the safest carries for the rescuer who attempts to tow a violently struggling victim because the latter is under complete control owing to his being securely held.

After the victim is leveled off with the chin pull the free arm of the rescuer is placed over the victim's shoulder and across his chest. There are three points of contact in this carry: (a) The rescuer's armpit is firmly clamped over the victim's shoulder; (b) his elbow is held firmly against the victim's chest; and (c) the hand of this arm is pressed against the victim's side. Contact of the chin with the opposite hand is now released and this arm begins stroking in a shallow, horizontal plane. A standard or reverse scissors kick may be used (figs. 58 and 61).

5. Head Carry.—This is an excellent carry with which to tow a victim when the rescuer has a good, strong frog kick, inverted scissors, or egg-beater kick. After the victim is leveled off with a chin pull, the palm of the free hand is placed directly over the ear of the victim. The fingers of the same hand are placed along the side of the jaw and the thumb connects with the eyebrow line. After this position is assumed with this hand, the other hand leaves the chin and assumes

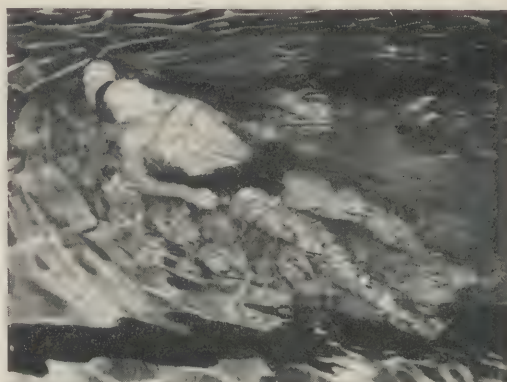


FIGURE 58.—Cross chest carry—the rescuer is shown swimming on his side, using a shallow, horizontal pull of the right arm while the left arm reaches over victim's shoulder and across his chest in a firm grip. Rescuer uses inverted scissors kick.

an identical position on the opposite side of the head. The rescuer is now lying on his back in a half-sitting position using the legs only for propulsion. The rescuer may use any one of the three kicks mentioned above (figs. 59 and 62).

6. Wrist Carry.—This carry is good for towing a victim through surf inasmuch as it enables him to face forward and bury his head in breaking waves as they pass. The rescuer grasps the wrist of the victim as in the surface approach from the front (fig. 51). The victim is now towed in a prone position while the rescuer swims on his side using a scissors kick.

7. Tired Swimmer's Carry.—The tired swimmer's carry can be used by a Navy man most effectively where a tired shipmate is to be sustained or moved along slowly. This carry is preceded by the tired swimmer's approach. The rescuer swims a slow, easy, modified breast stroke, with head above water, watching subject at all times, and legs executing a frog or inverted scissors kick. The subject is pushed along on his back while his

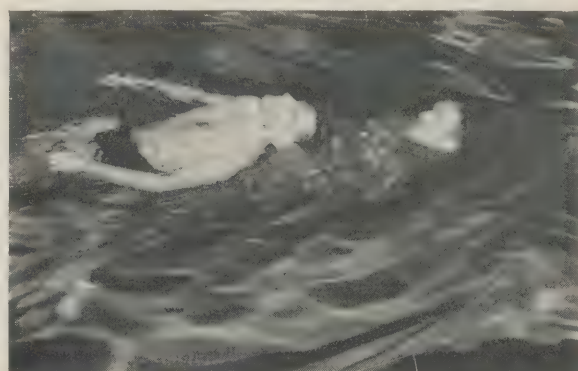


FIGURE 59.—Head carry—the rescuer on the right is shown towing a victim while swimming on his back, using either an inverted scissors or frog kick. Rescuer's hands firmly grasp the victim's ears and side of jaw.



FIGURE 60.—Block and carry—rescuer on the right has blocked off the panicky swimmer on the left by “stiff arming” victim against victim’s chest. The victim is now carried in this position with the rescuer swimming a side stroke using a shallow, horizontal arm pull—underwater view.



FIGURE 61.—Cross chest carry—rescuer is shown carrying the victim on his hip while swimming a side stroke, using a standard scissors kick. Under arm of rescuer is shown about to make its shallow pull through the water to the chest in a horizontal plane—underwater view.



FIGURE 62.—Head carry—rescuer is shown towing victim by placing hands around ears and sides of victim’s face while assuming a half-sitting position in the water. Rescuer is using a frog kick—underwater view.

hands, arms held straight, are placed firmly against the shoulders of the rescuer (fig. 54). The legs of the subject are separated and extended to the sides of the rescuer. The subject should be cautioned to keep his head up and watch the face of the rescuer.

8. Block and Carry.—A frightened and nearly exhausted man will attempt to grasp anything or

anyone near him that is above the surface of the water. Such a grasp may be warded off by stiff-arming the man. The palm of the rescuer is placed flat against the chest of the struggling man with the arm extended and elbow locked. This may avoid having to break a front head hold or a double grip on one wrist. Even a relatively poor swimmer may block or ward off such advances in this manner. If the rescuer is a good swimmer he may choose to allow the victim to firmly grasp the upper part of his blocking arm or shoulder, and while lying on his side, using a scissors kick and shallow arm pull, tow him for a short distance (fig. 60).

9. Equipment and Debris Tows and Pushes.—

Equipment and debris may be floating on the surface in disasters at sea which can be utilized by a man in assisting him to make a rescue. For the average swimmer their use may be the easiest, safest, and most practical way to approach a victim and either tow or push him to safety. A would-be rescuer might grasp one end of the material while the other end is extended or secured to the victim. In all the tows or pushes, usually the scissors or frog kick will be used by the rescuer to make progress through the water. Examples of equipment and debris tows and pushes are listed below.

1. Towing or pushing victims with rigid articles, such as: (a) Ring buoys, torpedo buoys, diamond buoys; (b) planks, poles or oars; (c) boxes or crates or (d) small rafts (figs. 63, 65 (and 66).

2. Towing victims with nonrigid articles, such as: (a) Trousers, (b) shirts or blouses, (c) coats, (d) belts, (e) lines (grasped by hands or secured around victim’s chest), (f) towels, (g) pillow cases, (h) mattress covers, (i) sacks, etc.

3. Towing victims with inflated clothing or other articles (fig. 64).

BREAKS FOR COMMON HOLDS

A man at some time may find it necessary to extricate himself from the hold or grasp of another when he is in the water. This situation might occur when even an excellent swimmer, who is a would-be rescuer, incorrectly approaches a victim to make contact for a carry. A swimmer who is just able to take care of himself might suddenly be grasped by a poor or nonswimmer in close proximity to him. A nonswimmer, who is able to stay afloat while wearing a life jacket or life belt, may find himself in serious difficulty if another

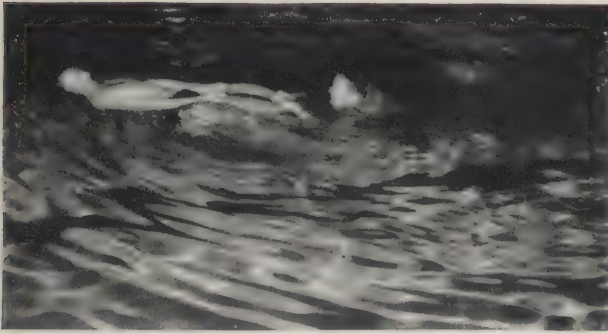


FIGURE 63.—Ring buoy tow—rescuer tows fully clad victim by extending ring buoy to man. He then lies on his back using a scissors or frog kick to tow victim.

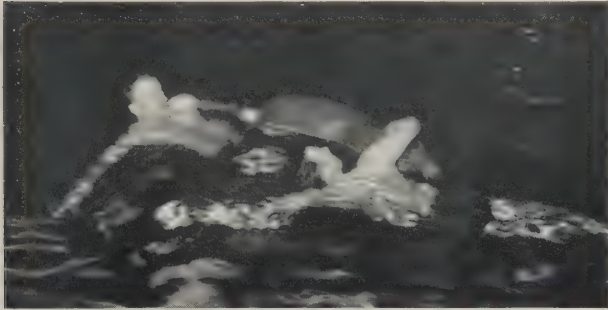


FIGURE 64.—Tow by inflated trousers—rescuer on the left is towing man by extending one end of a pair of inflated trousers. Rescuer is using the side stroke to tow victim.

man becomes frightened and panicky and holds onto him. For these reasons it is necessary that every Navy man know a few, simple, and effective methods of breaking or releasing himself from common holds. It is to be assumed that nonswimmers and those just able to take care of themselves will learn a method of release from the hold and then get away from the man. The better swimmers, of course, should learn to break the hold, keep contact with the victim, and put even a violently struggling man into a satisfactory or proper carry.

In the consideration and descriptions of breaks for holds which follow it should be stressed that the would-be breaker of the hold should submerge with the attacker prior to using any of the methods presented. The act of submerging the attacker will, in most cases, effect the release.

1. Breaks for Front Head Hold.—The first method of breaking a front head hold is for the breaker to force his hand between his own face and that of the attacker. If the attacker's head is on the breaker's right shoulder the latter's right hand is placed against the right side of the attacker's face, thumb under his jaw, three fingers on his cheek bone with little finger against his nose (fig. 67). The breaker's left hand grasps the at-

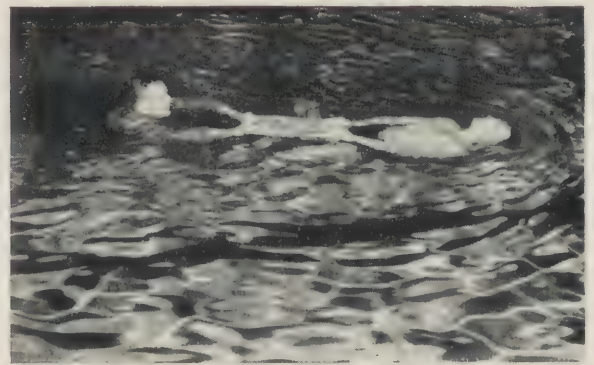


FIGURE 65.—Plank tow or push—rescuer on right is using a frog kick or inverted scissors while lying on his back to tow a fully clad victim who is hanging on to other end of plank. The scene becomes a push when the man on the left uses a strong frog kick to push victim (on right) who holds on to plank while lying on his back.

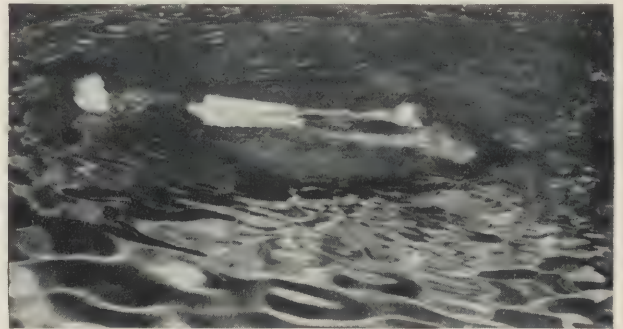


FIGURE 66.—Plank or debris tow—rescuer extends one end of plank to victim while hanging on to the other end, and then swims the side stroke to tow the man.



FIGURE 67.—Break for front head hold (first method).



FIGURE 68.—Break for front head hold (second method).

tacker's right arm in a forking-like grip, thumb on the inside just above the elbow. Leverage is now applied by the breaker's right hand against the attacker's face which turns him around and away from him. If contact and eventual carry is contemplated the breaker must quickly bring his right hand over the attacker's right shoulder and grasp his chin with the right hand; meanwhile the breaker's left hand is keeping contact with the attacker's right upper arm. After right hand of breaker contacts chin of attacker, the former's left hand is released from the right upper arm of the attacker and immediately begins stroking. If the attacker's head is on the breaker's left shoulder the opposite procedure should be followed.

A second method of breaking a front head hold is for the breaker to submerge with the attacker and while in a vertical position, place the heels of his hands against the abdomen of the attacker (fig. 68). The breaker now pushes the attacker away and upward. With the attacker now in a horizontal position, face downward, the breaker slips his right hand to the middle or small of the attacker's back and slides his left hand to the center of the attacker's stomach. The breaker now quickly rolls the attacker over so that he is on

his back. Breaker now quickly rises to the surface directly behind the head and shoulders of the attacker, grasps his chin with one hand and proceeds to level off the victim.

2. Break for Rear Head Hold.—Submerge with attacker. If the attacker's right arm is his lower arm as shown in figure 69, the breaker with his left hand should grasp the top of the attacker's right wrist in a forking-like manner, with the thumb of the breaker's left hand on the inside of the attacker's right wrist. The breaker's right hand should grasp the right upper arm of the attacker just above the elbow in a forking-like grip with breaker's right thumb on the under side of attacker's right upper arm (fig. 69). The breaker should endeavor to tuck his chin down against his chest throughout the movement of the break. The breaker's left hand now rotates the attacker's right lower arm and wrist inward and downward (fig. 69). At the same time the breaker's right hand pushes up attacker's right upper arm. The breaker now slips out to the side of and in back of the attacker. The right hand of the breaker, which was placed just above attacker's right elbow, now comes over attacker's right shoulder and is placed on his chin. When this



FIGURE 69.—Break for rear head hold.

is accomplished the breaker releases his left hand from the attacker's right wrist and begins stroking to level off victim. If the attacker's left arm happens to be the lower arm in the rear head hold the opposite procedure should be followed.

3. Break for Double Grip on One Wrist.—Submerge the attacker. If the right wrist of the breaker is grasped by the attacker as shown in figure 70, the breaker should grasp the left lower arm of the attacker with his left hand and hold on firmly as shown. Next, the breaker places his left foot in the hollow of attacker's right shoulder close to his neck (fig. 70). The breaker now extends his left leg. This action forces the attacker to release his right hand grip on the breaker's right lower arm, and also tends to turn attacker completely around so that his back is in front of breaker. The breaker now reaches over right shoulder of attacker and places his right hand over attacker's chin. While this is being done the breaker's left hand keeps contact with attacker's lower left arm. As soon as attacker's chin is firmly grasped by the breaker's right hand, the breaker then releases his left hand grip on the attacker's lower left arm and starts stroking with his left arm to level off the victim. If the attacker secures a double hand grip on the breaker's left wrist the opposite procedure should be followed.

SUGGESTIONS FOR PRACTICE DRILLS ON APPROACHES, CARRIES, AND BREAKS

It is recommended that there be (a) land drills; (b) shallow water drills; (c) deep water drills across and lengthwise of the pool, with rescuers and victims unclad, with victims fully clad and rescuers unclad, with both rescuers and victims fully clad; (d) combinations of abandoning ship drills with rescue drills.

ARTIFICIAL RESPIRATION

Responsibility for authentic information, and the formulation of specific instructions concern-



FIGURE 70.—Break for double grip on one wrist.

ing the correct methods of administering artificial respiration, are functions of the Bureau of Medicine and Surgery. Visual aids and literature on this subject have been prepared by the Bureau of Medicine and Surgery for distribution to naval activities. Therefore, no attempt is made here to present any procedures to be followed in this important phase of rescue work.

It is realized, however, that many physical instructors will be called upon to explain and demonstrate, as well as to supervise group drills, in the rescue technique. They should, therefore, familiarize themselves with, and become proficient in, the correct and accepted procedures of artificial respiration. The Schafer Prone Pressure Manual Method of artificial respiration is generally recognized as among the best and it is recommended that this method be thoroughly mastered.

RECOMMENDED FILMS

(Obtainable from commandant (director of training) of each naval district.)

- MN-1138 Physical Fitness Program for the U. S. Navy.
- MN-1145 Abandon Ship.
- MN-1319a Fundamentals of Open Sea Swimming.
- MN-1319b Elementary Tactics of Life Saving.
- MG-2063 Swimming Through Burning Oil and Through Surf.
- MA-2375 Swim and Live.

Chapter VI

CALISTHENICS

Three sets of calisthenics are used in the Navy Physical Fitness Program as follows:

I. *Warm-up calisthenics* consisting of three exercises. Unless men have been double-timed to the exercise area or have just completed some other strenuous activity, the warm-up calisthenics should be used to begin the activity period. This warm-up should precede early morning calisthenics, but not general calisthenics.

II. *Early morning calisthenics* consisting of seven exercises. These comprise the standard set of exercises that should be regularly used in a short, intensive exercise period.

III. *General calisthenics* consisting of 16 exercises. Three of these have alternate exercises. If the men lie on the deck, the alternate exercises

should be used. When these three sets of calisthenics have been mastered, supplementary exercises for special purposes (pp. 125 through 134) may be substituted.

All exercises are named. After the men have learned the exercises, the instructor should call out each exercise by name, thus commanding the men into the proper starting position so that the next event may proceed without any delay.

During the first few periods, the instructor should stand in front of the group and, in addition to directing the work, should demonstrate and perform the exercises with the men. After the exercises have been learned, however, this practice need not be continued. One of the better performers can then be placed in front of the



FIGURE A.—Early morning calisthenics.



FIGURE B.—Push-ups.

group, standing with his back toward the men. This man sets the example, thus freeing the instructor to move about, give commands, make suggestions, and otherwise direct the platoon in an efficient manner.

At the beginning of training, each exercise should be repeated only a limited number of times, and a short pause, not over 10 seconds, allowed after each exercise or after every two exercises. After a few (3-4) days, however, the number of repetitions should be gradually increased and the pauses decreased both in number and in length. After 15 to 20 days, each exercise should be repeated the maximum number of times indicated, with no time elapsing between exercises. As soon as the calisthenics have been mastered, there should be increased emphasis on unison and rhythm.

All the exercises should be done in good form and executed with vigor. The instructor should set a good example in this regard.

COMMANDS

In teaching calisthenics, the instructor may use two methods of giving commands. New exercises should be taught according to *command*. By this method there is (a) a *preparatory command*, describing the exercise; (b) a *pause*; and (c) a *command of execution*. The command of execution shall be a verb; for example, "Hands on hips—Place!" ("Place" being the command of execution). In this method of instruction, movement is not begun until after the command of execution has been given.

After the exercises have been learned, they are done in rhythmic cadence. In this method there is (a) a *preparatory command*; (b) a *pause*; and



FIGURE C.—Deep knee bends.

(c) a *command of execution*. The command of execution is usually the verb "*Begin!*" Upon hearing the command of execution, movement begins immediately and the instructor *counts* out the cadence. Each *count* coincides with the *end* of a movement in the exercise.

The *name* of an exercise can eventually be substituted for the *preparatory command*. If the men know the preliminary position for the exercise, there may be a combination of commands; for example, "*Push-ups—Position! One, two—Ready—Begin! One, two, one, two . . .*" Here "Position" is a command of execution for the men to assume the "ready" position before doing the push-ups. This position is taken in two counts. "Ready" is then a second preparatory command, and "Begin" is the command of execution. To end an exercise (bringing the group to attention) the commands "Company—Halt! One, two," are given on the last four counts. Usually the group maintains this position until the next command.



FIGURE D.—Back stretchers.



FIGURE 1. FIGURE 2.
FIGURE I-1.—Jumping jack.

I. WARM-UP CALISTHENICS

These exercises are to be used as a regular early morning routine unless the men have just finished participating in activity such as double-timing or jog-marching.

1. Jumping Jack (20–40 times) : (fig. I-1.)

Starting position: Standard position of attention (fig. 1). **Movement:** (1) Performer raises



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE I-2.—Windmill.



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4
FIGURE I-3.—The 440.

arms sideward and upward and touches hands above head (arms straight) while he jumps, feet apart, sideward (fig. 2). (2) Performer springs back to the original position (fig. 1.)

2. Windmill (20–40 times) : (fig. I-2.)

Starting position: Feet spread 24 inches, legs straight, arms parallel with the deck (fig. 1). **Movement:** (1) Performer keeps legs and arms straight, twists trunk to the side, right hand touching toes of left foot (fig. 2). (2) From the position shown in figure 2, performer twists trunk to the right, left hand touching right toe, head turned, looking up at hand of vertical arm (fig. 3).

3. The 440 (20–40 steps) : (fig. I-3.)

Starting position: Attention (fig. 1). **Movement:** Performer *marks time* according to the method indicated in the "School of Recruit" (fig. 2). Upon the command "Double time—March" the cadence is doubled. Knees are high (fig. 3). During *double time*, performer brings arms up and across in front of body with vigorous action (50–100 steps). The cadence is returned to the speed of the "Mark time—March" (fig. 4) (20–40 steps).

II. EARLY MORNING CALISTHENICS

These exercises are to be given regularly in the order indicated except when weather conditions make it inadvisable, in which case, substitute exercises may be selected from the list of General Calisthenics.

The men warm up by marching or jogging to the exercise area or by performing the Warm-up Calisthenics.

1. Squat-Thrust (15–40 times) : (fig. II-1.)

Starting position: Standard position of attention (fig. 1). **Movement:** (1) Performer takes



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4. FIGURE 5.
FIGURE II-1.—Squat-thrust.

the squat-rest position (fig. 2), with hands on the deck in front of feet. (2) Performer extends feet and legs directly backward with the weight on hands and toes (fig. 3). (3) Performer returns to the squat-rest position (fig. 4). (4) Performer completes the exercise by returning to the erect position, leaning forward slightly (fig. 5).

2. Twist and Bend (8-30 times) : (fig. II-2.)

Starting position: Stride position, with arms straight and over head, thumbs interlocked, feet spread about 24 inches (fig. 1). **Movement:** (1) In a sweeping motion performer turns trunk and bends it to the side; lowers hands, touching the deck outside right foot (fig. 2). (2) In a wide, sweeping motion arms and trunk are raised, passing through the vertical position (fig. 1), turning to left and touching hands to deck outside left foot (fig. 3). Legs are straight throughout the exercise. Cadence of the exercise is relatively slow.

(3) Back Stretcher (10-20 times) : (fig. II-3.)

Starting position: Stride stand, feet 10 to 12 inches apart, arms vertical over head, palms facing each other (fig. 1). **Movement:** (1) Performer bends forward, knees slightly bent, and swings arms downward so that hands pass between



FIGURE 1. FIGURE 2.
FIGURE II-3.—Back stretcher.

the legs and touch the deck behind the feet (fig. 2). (2) Performer returns to original position shown in figure 1. Repeat the movement vigorously.

4. Body Twister (20-40 times) : (fig. II-4.)

Starting position: Standing, feet 5 inches apart, hands clasped behind head (fig. 1). **Move-**



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE II-2.—Twist and bend.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE II-4.—Body twister.



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4.
FIGURE II-5.—Back stroke.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE II-6.—Squat-jump.

ment: (1) Upper body bends from diaphragm to right (fig. 2). (2) Body moves across in a horizontal plane from right to left (fig. 3). (3) Return upward to original position (fig. 1). Bend at diaphragm, not hips, and draw in stomach while doing. The shoulder muscles are relaxed. The exercise is done in a rotating motion of the upper body. Repeat 20 times from right to left and then reverse the motion.

5. Back Stroke (3–5 times) : (fig. II-5.)

Starting position: Attention (fig. 1). **Movement:** (1) Keeping arms as straight as possible, with chest high and lower abdomen in, performer circles arms inward across each other (fig. 2). (2) Performer continues the arm movement upward and outward (fig. 3). (3) Performer continues the arm movement outward, backward, and

downward (fig. 4). (During the first three counts of this movement, performer inhales deeply.) (4) Performer completes the rotary movement downward as shown in figure 4 and returns to original position (fig. 1). Deep exhalation at count of *four*. The movement is relatively slow.

6. Squat-Jump (10–35 times) : (fig. II-6.)

Starting position: Standing; hands (palms down) are clasped on top of head; feet 4 to 6 inches apart, with heel of left foot on a line with toes of the right foot (fig. 1). **Movement:** (1) Performer drops to a squat on the right heel (fig. 2) and immediately springs upward, clearing the deck and reversing the position of feet (fig. 3). He then drops to a squat on the left heel. The count is spoken just as performer reaches the lowest point. The movement continues rhythmically with consecutive commands, *two, three, four, five, etc.*

7. Stretch-Up (3–5 times) : (fig. II-7.)

Starting position: Head erect, chest high, lower abdomen retracted, and hands on hips (fig. 1). **Movement:** (1) Performer rises slowly on toes (fig. 2). (2) Performer continues to rise on toes to greatest height possible, pressing backward and downward with arms and shoulders while inhaling deeply (fig. 3). (3) Performer lowers heels slowly, exhaling slowly and keeping chest high (fig. 2). Performer completes exhalation and returns to starting position, with feet flat on deck (fig. 1).

III. GENERAL CALISTHENICS

The exercises included under General Calisthenics offer a varied selection for use during the regular physical training period. During this daily period (other than in the early morning) it is to be understood that calisthenics comprise only part of the activity program that is offered. To maintain interest, the instructor should introduce new exercises from time to time. According to the needs of the group, he may later make selections from the program of Supplementary Exercises. (See pp. 125–134.)

In the exercises which follow it should be noted that exercises 4, 8, and 10 have alternates. If conditions are such that the men may lie on the deck, exercises 4, 8, and 10 should be used; if the men must stand, exercises 4a, 8a, and 10a should be given.

1. **Jumping Jack** (20-40 times): (fig. I-1.)

Same instructions as under No. 1, Warm-up Calisthenics, page 58.

2. **Back Stretcher** (10-20 times): (fig. II-3.)

Same instructions as under No. 3, Early Morning Calisthenics, page 59.

3. **Squat-Thrust** (15-40 times): (fig. II-1.)

Same instructions as under No. 1, Early Morning Calisthenics, pages 58-59.

4. **Up Oars** (10-30 times): (fig. III-4.)

Starting position: On back, with arms extended behind head on the deck (fig. 1). **Movement:** (1) Performer sits up, reaches forward with arms, and pulls knees against chest with a rowing motion (fig. 2). (2) Performer lowers body, extends arms and legs, returns to original position (fig. 1). The exercise is done rhythmically and without breaks in the movement.

4a. **Twist and Bend** (8-20 times): (fig. II-2.)

Same instructions as under No. 2 Early Morning Calisthenics, page 59.

5. **Push-Up** (6-25 times). (fig. III-5.)

Starting position: Prone position with chest to deck (fig. 1). Hands shoulder-width apart, with fingers spread and pointing straight ahead. **Movement:** (1) Performer straightens arms and pushes shoulders as high as possible (fig. 2). (2) Performer bends elbows and returns to original position (fig. 1). Body kept straight throughout exercise.

6. **Jump and Touch** (8-20 times): (fig. III-6.)

Starting position: Half crouch, as though performer were about to begin a standing jump, arms backward (fig. 1). **Movement:** (1) Performer swings arms forward and springs straight upward, taking a "tuck" position with knees to chest, heels to buttocks, and swinging arms downward outside feet (fig. 2). (2) Performer lands in original position (fig. 1), ready for the next spring upward (fig. 3).

NOTE.—After a week or two the leg movement of this exercise may be changed to a movement in which legs are swung forward and upward, with knees nearly straight, but with legs separated about 60 degrees; at the same time toes are touched by fingers.

7. **Bobber** (10-20 times): (fig. III-7.)

Starting position: Attention (fig. 1). **Movement:** (1) Keeping knees straight, performer drops trunk (relaxed) forward and downward, touching fingers to ankles (fig. 2) and immediately "bobs" or "bounces" part way back toward erect



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE II-7.—Stretch-up.

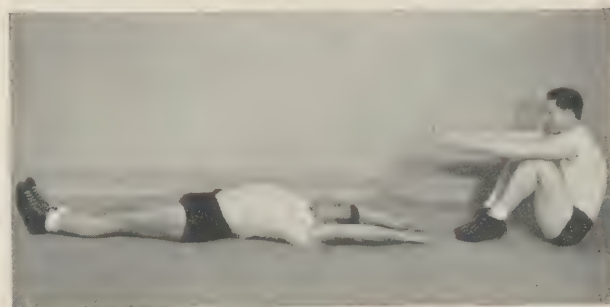


FIGURE 1. FIGURE 2.
FIGURE III-4.—Up oars.



FIGURE 1. FIGURE 2.
FIGURE III-5.—Push-up.

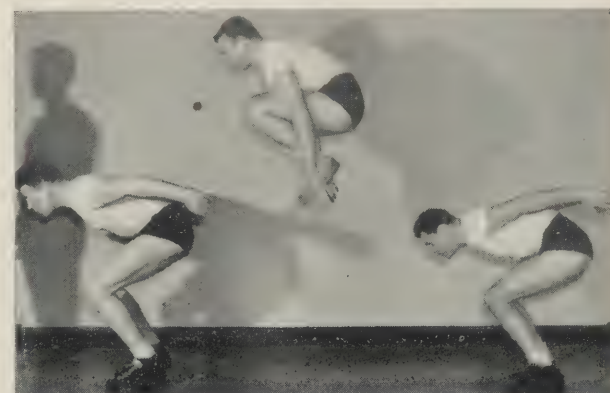


FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-6.—Jump and touch.

position (fig. 3). (2) Performer drops from the position shown in figure 3 to the position with



FIGURE 1.

FIGURE 2.

FIGURE 3.

FIGURE 4.

FIGURE 5.

FIGURE 6.

FIGURE 7.

FIGURE 8.

FIGURE III-7.—Bobber.

hands touching ankles (fig. 2). (3) Same as *count two*. Performer "bobs" trunk again in the same way as for *count two*. (4) Performer returns to the erect position (fig. 4). The first three counts of this exercise are done in standard cadence, whereas a longer period of time is given to *count four*.

NOTE.—As the men become more supple, they should bend deeper, as shown in figures 5, 6, 7, and 8.

8. Snap and Twist (10–20 times) : (fig. III-8.)

Starting position: On back, with arms extended behind head on the deck (fig. 1). **Movement:**

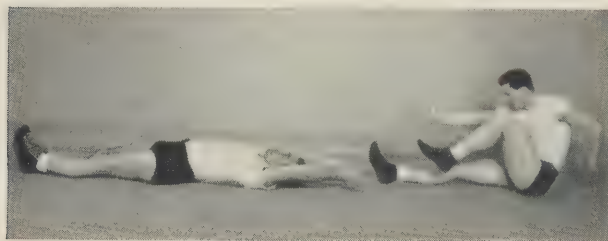


FIGURE 1.

FIGURE 2.

FIGURE III-8.—Snap and twist.



FIGURE 1.

FIGURE 2.

FIGURE 3.

FIGURE III-8a.—Side bend.

ment: (1) With a "snap and twist" action, performer raises body and left knee, extends right arm forward, and extends left elbow backward (fig. 2). This is an "explosive" type of movement. (2) Performer returns to the original position (fig. 1). (3–4) Performer repeats movement to the opposite side, and movement is done alternately from the right to the left. The exercise is done rhythmically.

8a. **Side Bend** (8–15 times each side) : (fig. III-8a.)

Starting position: Stride-stand with feet 15 to 18 inches apart. Arms vertical and thumbs clasped (fig. 1). **Movement:** (1) Performer bends arms and trunk sideward to the right as far as possible (fig. 2). (2) With a sweeping movement, performer bends trunk and arms as far to the left as possible, alternating from right to left side.

9. Back Stroke (3–5 times) : (fig. II-5.)

Same instructions as under No. 5, *Early Morning Calisthenics*, page 60.

10. Back Twist (10–20 times on each side) : (fig. III-10.)

Starting position: Lying on deck, face up, arms extended sideward, palms on the deck, and legs vertical (fig. 1). **Movement:** (1) Keeping arms, shoulders, and head touching the deck, performer lowers legs close to the deck on the left (fig. 2). (2) Performer then raises legs in a sweeping motion through vertical plane and lowers them to the deck on the right (fig. 3). The cadence in this exercise is slow.

10a. **Explosive Punch** (10–20 times on each side) : (fig. III-10a.)

Starting position: Arms to the thrust position and left foot one full stride forward and sideward (fig. 1). **Movement:** (1) Performer bends and



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-10.—Back twist.

twists trunk forward and sideward left and with right fist touches the deck 6 inches in front of left foot (fig. 2). (2) Performer returns immediately to erect position (fig. 3). This exercise is executed with an explosive action. Repeat exercise, reversing position of feet and hands.

11. **Squat-Jump** (16–50 times): (fig. II-6.)

Same instructions as under No. 6, *Early Morning Calisthenics*, page 60.

12. **Stretch-Up** (5–20 times): (fig. II-7.)

Same instructions as under No. 7, *Early Morning Calisthenics*, page 61.

13. **The 880** (200–400 brisk steps): (fig. I-3.)

Same instructions as under No. 3, *Warm-up Calisthenics*, page 58, except for increase in the number of steps.

14. **Bend and Squat** (10–20 complete movements): (fig. III-14.)

Starting position: Performer stands in an erect position with hands on hips (fig. 1). **Movement:** (1) Keeping knees straight, performer bends forward with trunk as far as possible, touching fingers (or palms, if possible) to the deck (fig. 2). (2) Performer returns to erect position, with hands on hips (fig. 3). (3) Performer does full knee bend, extending arms forward and parallel with the deck, keeping back nearly straight and bearing weight on toes (fig. 4). (4) Performer returns to erect position, with hands on hips (fig. 5). The cadence of this exercise is slow.

15. **Thigh Toucher** (15–30 times): (fig. III-15.)

Starting position: Arms extended vertically over head (fig. 1). **Movement:** (1) Keeping



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-10a.—Explosive punch.

chest high, lower abdomen in, and buttocks taut, performer brings arms briskly down so that hands only touch lower thighs (fig. 2). He bends head forward as arms come down, and chin touches chest. (2) Performer returns arms to extended position above head and raises head up high (fig. 3). He presses arms upward and back-



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4. FIGURE 5.
FIGURE III-14.—Bend and squat.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-15.—Thigh toucher.



FIGURE 1.

FIGURE III-16.—Reclining pull-up.

FIGURE 2.

ward, raises chest, and straightens upper back vigorously.

16. Reclining Pull-Up (5–15 times each performer) : (fig. III-16.)

Starting position: Performer A lies on back on deck; performer B stands astride A and grasps his upstretched hands (fig. 1). **Movement:** (1) Performer A keeps his body straight, and while

being supported by his heels does a “pull-up” with his arms to B’s crotch (fig. 2). (2) A then lowers himself to original position (fig. 1) except that his back does not come to rest on the deck. The movement is continuous. After a designated number of exercises performers A and B change positions.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

Chapter VII

DISTANCE AND OBSTACLE COURSE RUNNING

Special attention should be given to running as a conditioning activity because of its value in developing endurance. All men should be taught to run in good form, trained to run fast, and to be able to keep going for reasonably long distances. On page 66 there are illustrations of running together with a description of what constitutes good form.

DISTANCE RUNNING

This type of running is frequently referred to as "road work" in the training of athletes. In the physical conditioning program it is used for early morning workouts, for getting the men to and from the exercise field and drill hall, and as part of the regular schedule of activity. It consists of running for varying distances across the



FIGURE 1.—Early morning running.



FIGURE 1.

FIGURE 2.

FIGURE 3.

FIGURE 4.

FIGURE 5.

FIGURE 6.

FIGURE 7.

FIGURE 2.—Good form in running.

open country, through the woods, over hills, and across fields; on the drill ground or the road; or up and down long deck spaces. During early training, the running should be largely slow jogging, alternated with some periods of fast walking. As the physical fitness of the men improves, the distance to be run is increased and the distance to be walked is decreased. Later, the speed of the run is increased, with occasional sprints introduced. The run should be from 10 minutes to half an hour.

GOOD FORM IN RUNNING

1. Body leans slightly forward.
2. There is a general impression of relaxation.



FIGURE 3.—Obstacle course—cargo nets.

3. Relatively constant position of chest (follow fig. 1 through fig. 7.)

4. Exceptional leg drive (figs. 4-5).

5. Lands on heel and ball of foot; most weight borne on ball (fig. 2). Short period for recovery as leg muscles relax allowing more weight on heel (fig. 3). Final drive forward is from toes—a spring-like action (figs. 4-5).

6. Free swinging arm action (follow arms in fig. 1 through fig. 7). Notice coordination of arms with opposite legs. Hands come up and across chest to line at center of body. Arm action counterbalances leg action.

7. Excellent hip action. Vigorous arm action brings hips forward for greater distance on each stride (follow hip action from fig. 1 through fig. 7).

8. Head up.

9. Eyes focused some distance ahead.

10. Impression of driving straight ahead—no lost motion sideward.

11. No overstride. Notice that leading leg never has knee fully extended. Leg goes out, down, and back with action similar to that of a trotting horse. (See left leg in fig. 1 through fig. 7.)

JOG MARCHING

Distance running has a number of variations among which is one commonly known as jog marching. This form of running combines alternating action in marching, jogging, walking, jumping, and sprinting. A suggested schedule for a jog marching workout follows:

a. Column of fours, arm's length distance apart.

b. Forward march. Remain in cadence throughout routine, 20 paces.

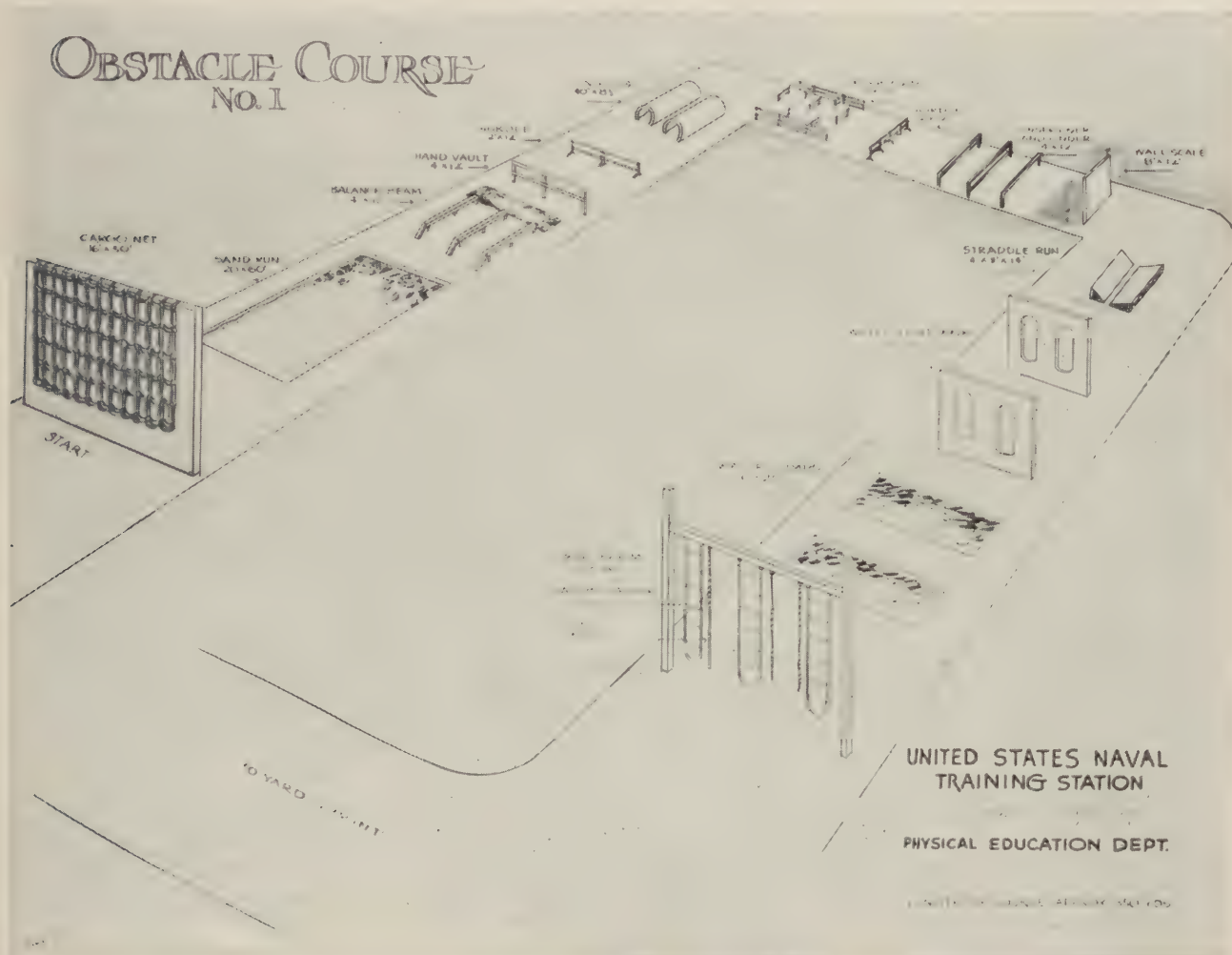


FIGURE 4.—Obstacle course layout.

- c. Run (jog) slowly in columns of fours, 440 yards.
- d. Walk, 50 paces.
- e. Run (with a high knee), 20 paces.
- f. Walk (legs wide spread), 20 paces.
- g. Run (legs straight and thrown from hips), 10 paces.
- h. Walk (legs wide spread in half squat), 10 paces.
- i. Walk (legs wide spread in full squat), 10 paces.
- j. Run (jog) slowly, 440 yards.
- k. Walk (high knee), 20 paces.
- l. Standing broad (1) jump—then walk 10 paces.
- m. Standing broad (2) jumps consecutively—then walk 10 paces.



FIGURE 5.—Obstacle course—cargo nets over the side.

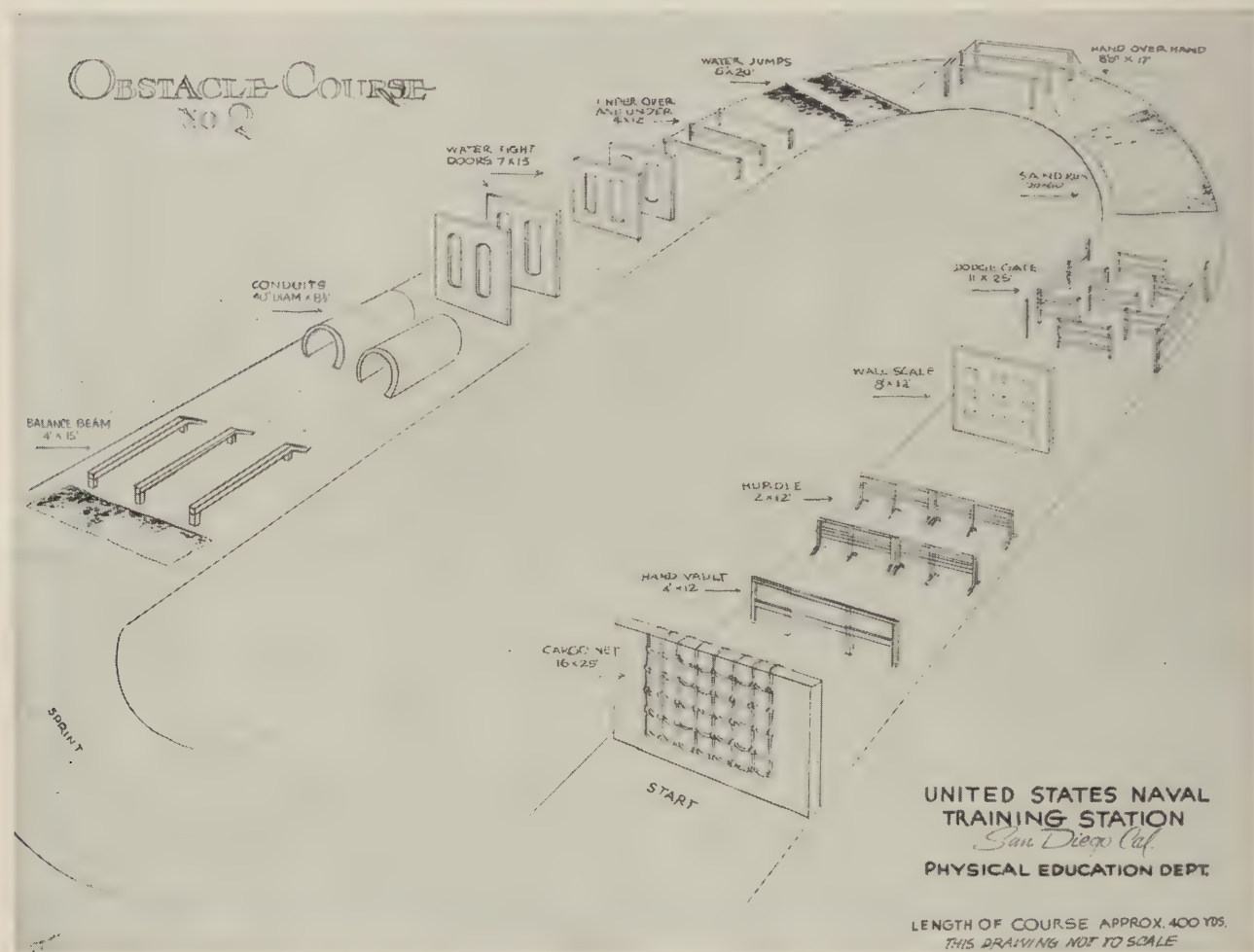


FIGURE 6.—Obstacle course lay-out.

- n. Standing broad (3) jumps consecutively.
- o. Walk 50 paces (fast).
- p. Walking—bend and touch the ground at the instep.
- q. Left hand to right foot, right hand to left foot, repeat 10 times each hand for 60 paces (every third step).
- r. Finish with—jog—run—sprint (40 yards).

OBSTACLE COURSE RUNNING

In this type of running the men being exercised must make progress over, under, around, or through the obstacles that are placed in their way. Running is thus combined with other conditioning activities. The result is an excellent event for the development of all-round endurance and stamina as well as agility, balance, and speed.

Obstacle courses vary in length and in difficulty. They should be constructed so as to use to best

advantage the local topography and also to furnish the type of training most needed by the men.

There should be provision for the following types of physical maneuvers:

1. **Running.**—Including endurance running, sprint running, crouch running, running with heavy weights, zigzag running, running over loose terrain, and running interspersed with occasional jumping, hand vaulting, and ducking under improvised booms.

2. **Falling.**—Including falling with complete pack, falling to the side, falling and rolling, and falling while at full speed.

3. **Jumping.**—Across ditches, from various levels or heights, and across stationary objects.

4. **Hurdling.**—Over obstacles of various heights and widths.

5. **Crawling.**—Around objects, through tunnels, and under low barriers.



FIGURE 7.—Obstacle course—horizontal lines.

6. **Climbing.**—Up and down wood or rope ladders, up and down suspended lines, up and down cargo nets, over high barriers, and up and down sharp inclines either natural or constructed.

7. **Balancing.**—Walking on balance beams, narrow inclines, or any narrow or confined space.

8. **Vaulting.**—Over various objects such as rails and capstans (improvised), low barriers, or other similar barricades.

9. **Squeezing.**—Through small openings.

It is advisable wherever possible to have ob-



FIGURE 8.—Obstacle course—escape hatch.

stacle courses of progressive difficulty. This may mean more than one course; or that additional obstacles or increased distance, or both, may be added to the one available course after men have become conditioned to it.

Customarily the men are made well acquainted with the nature of the course and the correct method of mastering each obstacle before they run the complete course. Care should be taken in the construction of each obstacle so that the chance of accident is reduced to a minimum.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

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Chapter VIII

BOXING

Boxing develops fleetness of foot, weight control, coordination, and the ability to successfully resist an attacking opponent. Properly taught and practiced, it develops self-control, cool, decisive thinking in emergencies, self-confidence, and courage. In addition, it is an excellent exercise for the development of strength, endurance, and agility.

Boxing is a sport as old as the art of war itself, and provides in its elements of individual combat,

a close parallel to the battle conditions that are faced today. The feint, the dodge, the counter-thrust, and the sudden devastating finishing blow, are as much a part of modern combat as they are of boxing.

Instruction to beginners in the science of boxing should not start with actual boxing, as the participant is likely to learn more bad boxing habits than good ones. Rather, good instruction will begin with boxing movements in the form of



FIGURE A.—Mass boxing instruction.

shadow boxing so that the fundamental offensive and defensive movements may be thoroughly learned. After that, the men should be paired for practice in certain defensive techniques until they have mastered the basic movements in combination. Only after this instruction has been completed should the men be permitted to box competitively.

Boxing has been one of the most popular athletic activities of naval life. Boxing shows continue to play a very significant part in the lives of naval personnel, officers and enlisted men alike. Attendance is always at a maximum, indicating the vital interest in the sport which, when properly administered, can be developed into one of the most healthful means of recreation.

COMPETITIVE BOXING

Boxing matches staged at naval activities afloat and ashore should be between men of approximately the same weight and experience. Unless there is a fleet or other championship at stake, the contest should be limited to three 2-minute rounds with 10-ounce gloves for all matches of middle-weight class 160 pounds or under; 12-ounce gloves should be used for all matches above middle-weight. In the absence of local or fleet rules, A. A. U. rules will apply to all contests.

Only experienced and competent officers and petty officers should participate in the administration of service boxing contests. This is particu-



FIGURE B.—Shadow boxing.

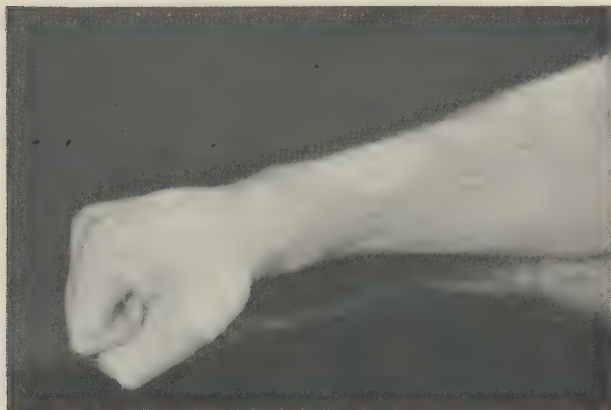


FIGURE 1 (a).—Proper alignment of fist—knuckles are in a straight line with forearm.



FIGURE 1 (b).—Front view of fist—thumb is folded over index and middle finger.



FIGURE 1 (c).—Straight view of fists—when properly made and aligned the wrists do not bend outward.

larly applicable to the timekeeper. A well-prepared and experienced officer or petty officer should always handle the watch and bell and be prepared to shorten the round whenever there is danger of injury from temporary disadvantage, one-sidedness, mis-matching, or exhaustion. It is the responsibility of the officer in charge to see

that contestants are not unnecessarily punished or injured in service matches.

LESSONS IN FUNDAMENTALS

In presenting each movement, the instructor should first demonstrate it, then explain its more important parts and lead the group to practice it.

Lesson 1: Instruction in the Proper Make of a Fist.—The fingers should be closed with the thumb folded over the index and middle finger (fig. 1 (a), (b), (c)).

Lesson 2: Proper Stance.—In the “boxing position” the feet are in the “walk-stand” position, left foot one length of itself in front of the right, the heel of the right foot being on a line with the left foot (fig. 2 (a), (b)). The advanced foot should be pointing forward, flat on the ground, the right foot, toes out at a 70 degree angle. Both knees should be slightly bent with the weight of the body almost equally divided on both feet and all the muscles of the body relaxed. The boxer then has an easy, graceful carriage and can manipulate his feet and legs in the quickest way possible. This permits development of the most graceful and efficient footwork.

In the “boxing position” the left arm is extended out turning the left side toward the opponent. The arm is slightly bent, hand on a level with the chin and not too tightly closed. The right arm is bent in front of the chest with the elbow guarding the liver and the hand open, palm out, guarding the chin. The position is easy and relaxed. The man should keep well guarded, be alert, and act quickly. The boxer should not be permitted to take position with right hand and foot forward, except as a definite part of a maneuver. Ambidexterity is not a valuable skill. On the contrary, changing from orthodox to south-paw stance can be very dangerous.

Eyes.—The boxer should be looking into opponent's face, being aware of every move opponent makes. The boxer should wait for his chance and when it comes act on it instantly and decisively. The instructor should put plenty of “snap” in every movement he executes and should inject this same spirit into every man in his company. The success of any boxing group depends on the quality and enthusiasm of instruction.

Muscles.—The muscles should be relaxed as much as possible in order to postpone fatigue;

this relaxation also gives the boxer better control of his body.

Hands.—The hands should be relaxed as much as possible so that the fist will not tire and lose its firmness. Fist should be tightened only at the moment of impact. When bandages are used they should be put on loosely so that hands can close without stopping circulation.

Gloves.—For competition 10-ounce gloves for middleweights (160 pounds) and all classes below; 12-ounce for all above middleweight. Only 12-ounce and 14-ounce gloves should be used for training and recreation bouts.

Breathing.—Breathing should be normal. Holding the breath for any reason should be discouraged.

Footwork.—Footwork should be practiced regularly. Rhythmic shadow dancing to music will be found very beneficial in developing agility and coordination between hand action, footwork, and breathing.



FIGURE 2 (a).—Proper stance or boxing position—left hand and left foot extended, feet not over twelve inches apart, left side of body slightly turned toward opponent.



FIGURE 2 (b).—Front view boxing position—left hand extended and crooked at elbow, left fist about shoulder high, right arm bent, elbow close to body, hand extended as a guard, but free to hit straight.

Lesson 3: Method of Delivery of Effective Blows.—

Left jab (fig. 3).

Straight left to head (fig. 3).

Straight left to body (fig. 4).

Left hook to head (fig. 5).

Left hook to body (fig. 6).

Left uppercut to body (fig. 7).

Straight right to head (fig. 8).

Straight right to body (fig. 9).

Right swing to head (fig. 10).

Right uppercut to body (fig. 11).

Right uppercut to jaw (fig. 12).

Right cross counter (fig. 13).

Lesson 4: Defenses Against Blows.—

Blocking straight left to head (fig. 14).

Blocking left hook to head (fig. 15).

Blocking left hook to body (fig. 16).

Blocking straight right to head (fig. 17).

Blocking right to body (fig. 18).



FIGURE 3.—Left jab or straight left to head—left arm is extended full length from shoulder, left side of body turned toward opponent to increase reach.



FIGURE 5.—Left hook to head—left side of body is extended toward opponent, arm crooked at elbow and blow brought over guard to opponent's face.



FIGURE 4.—Straight left to body—left side of body turned toward opponent to give as much reach as possible, body crouched to avoid opponent's hand and to enable blow to travel straight to mark.



FIGURE 6.—Left hook to body—left hand is driven toward body below opponent's guard, striking with palm down to region of solar plexus.

SHADOW BOXING LESSONS

[NOTE.—At conclusion of each exercise, men will return to "boxing position."]

LESSON I

1. From Attention to Boxing Position:

The command is: 1. Boxing. 2. POSITION.

When the command of execution is given the man will step forward with left foot into boxing position, turning left side toward imaginary opponent.

2. Recovery to Attention:

The command is: 1. Platoon. 2. ATTENTION.

To recover, step forward with rear foot into attention.

3. Left Lead:

The command is: 1. Left. 2. LEAD.

This movement is executed from the boxing position.

The hand begins the blow with the palm turned in and as it travels, the fist closes tightly, finishing with a snap so as not to lose balance.

The instructor should place strong emphasis on the shoulder movement in connection with this blow, getting as much reach as possible and shoving the whole body weight into the blow.

This exercise is repeated for eight counts.

4. Advance with Left Lead:

The command is: 1. Left lead. 2. ADVANCE.

From boxing position the man strikes out with the left hand, finishing the blow with a snap, and at the same time steps forward about 12 inches with the left foot, following up immediately with right foot. Feet should never be widespread.

This exercise is repeated for eight counts.

5. Retire:

The command is: 1. Platoon. 2. RETIRE.

From boxing position the man steps back with right foot about 9 inches, retiring immediately with left foot.

This exercise is repeated for eight counts.

Note to instructor: The instructor should always explain and demonstrate the exercise before giving the command. After the men have advanced eight counts (exercise 4) they should retire eight counts (exercise 5) so as to be returned to their original formation.

LESSON II

Review lesson I.

6. Left Lead and Right Uppercut:

The command is: 1. Left lead and right uppercut. 2. LEAD.

Count 1, the man leads with left hand from boxing position, and at the same time lowers the right hand to be in position.

Count 2, he draws the left hand and arm back, at the same time uppercuts with the right, palm up. He should twist the body around with the uppercut to get the reach and weight of the body back of the blow.

This exercise should be repeated for eight counts.

7. Advance with Left Lead and Right Uppercut:

The command is: 1. Left lead and right uppercut. 2. ADVANCE.

Count 1, the man advances with left lead, taking one step forward with left foot, and, as the arm extends for the blow, lowers the right hand to be in position.

Count 2, he uppercuts with right hand, advancing right foot, and at the same time draws the left hand back and up as a guard.

This exercise is repeated for eight counts.

8. Left Lead with Jab:

The command is: 1. Left lead with jab. 2. LEAD.

Count 1, the man leads with left hand at head, then draws hand back about 6 inches.

Count 2, he then jabs left at head.

This exercise is repeated for eight counts.

9. Advance with Left Lead and Jab:

The command is: 1. Left lead with jab. 2. ADVANCE.

Count 1, the man advances one step with left lead at head, then draws the hand back about 6 inches.

Count 2, he then jabs left at head.

This exercise should be repeated for eight counts.

10. Advance with Left Lead, Jab, and Right Uppercut:

The command is: 1. Left lead, jab, and right uppercut. 2. ADVANCE.

Count 1, the man advances one step with left lead at head.

Count 2, he again jabs with left, lowering right hand to be in position for uppercut.

Count 3, he uppercuts with right hand.

This exercise is repeated for eight counts.

LESSON III

Review lessons I and II.



FIGURE 7.—Left uppercut to body—slipping to left of opponent's lead, boxer steps in with left foot and at same time brings blow upward to the body, palm turned up.



FIGURE 9.—Straight right to body—slip to left of opponent's lead bringing right straight to opponent's heart region.



FIGURE 8.—Straight right to head—blow delivered straight from shoulder as opponent leads with left swing, body pivots from hip to add force and reach to blow.



FIGURE 10.—Right swing to head—blow is landed from boxing position with left foot out, the swing making an arc ending at opponent's head.

11. Shift:

The command is: 1. Platoon. 2. SHIFT.

Count 1, from boxing position, the man jumps, changing the position of the feet into right boxing position.

This exercise is repeated back and forth for 20 counts.

12. In and Out:

The command is: 1. In and out. 2. BEGIN.

Count 1, the man should rise on toes of both feet and leap forward 12 inches, keeping the feet close to the floor.

Count 2, he bounces back maintaining boxing position.

The exercise should be done without breaking the rhythm for 20 complete motions.

13. Forcing—Advance:

Technique is to stalk opponent by advancing short steps in boxing position.

The command is: 1. Forcing. 2. ADVANCE.

Count 1, man shuffles left foot forward 12 inches and at count 2, follows with the right, staying in boxing position, alert and ready.

Exercise should be done for 20 steps, increasing speed as skill is acquired.

14. Retreat:

Technique is to calmly retreat from opponent's offensive action, maintaining boxing position and poise.

The command is: 1. Retreat. 2. RETREAT.

Count 1, man shuffles right foot back 12 inches and at Count 2, follows with left.

This and exercise 13 come under the heading "Footwork" and should be done with the legs and feet only.

15. Advance with Left Lead to Stomach and Right Cross to Jaw:

The command is: 1. Left to body and right cross to jaw. 2. ADVANCE.

Count 1, the man advances in boxing position turning left side toward opponent and bending, drives straight with left lead to solar plexus.

Count 2, as the left hand lands, he quickly retrieves it and hits out forcefully with right hand for jaw.

This exercise is repeated for eight counts.

16. Advance with Left and Follow-Up with Right Cross:

The command is: 1. Left and right cross follow-up. 2. ADVANCE.

Count 1, the man advances with left lead to jaw and returns to boxing position.

Count 2, from boxing position he drives with right cross for jaw.

This exercise is repeated for eight counts.

LESSON IV

Review previous lessons.

17. Crouch and Left Lead for Solar Plexus:

The command is: 1. Crouch and left lead. 2. CROUCH.

Count 1, the man crouches, bending low at knees, twisting the body to the right, drawing left hand back and deftly turning head away to the right. This increases reach and protects from counter.

Count 2, he hits with left for solar plexus taking one step forward and putting the weight of the body into the blow.

This exercise is repeated for eight counts.

18. Advance with Crouch, Left and Right Uppercut:

The command is: 1. Crouch, left and right uppercut. 2. ADVANCE.

Count 1, the man advances with leading foot and crouches, leaving rear foot in place, and drawing left hand back.

Count 2, he turns slightly, bends forward to left and uppercuts with left drawing the rear foot closer and right hand bent in front of chin.

Count 3, he draws left arm back and at the same time uppercuts with right.

This exercise is repeated for eight counts.

LESSON V

Review quickly all previous lessons.

19. Ward off Opponent's Left Swing with Right and Counter with Right for Jaw.

The command is: 1. Ward off and counter. 2. WARD OFF.

Count 1, the man wards off opponent's left lead with heel of right hand.

Count 2, he then chops right down to opponent's jaw.

This exercise is repeated for eight counts.

20. Left to Right Hook:

The command is: 1. Left and right. 2. HOOK.

Count 1, the left hand hooks quickly for the jaw, at the same time the body swings slightly to the right.

Count 2, the right hooks for jaw, pivoting from knees, at the same time head is lowered to avoid counter.

This exercise to be repeated for eight counts.

21. Left Chop for Face and Right Uppercut:

The command is: 1. Left chop and right uppercut. 2. CHOP.

Count 1, from boxing position the man raises the hand about 6 inches higher than the opponent's jaw.

Count 2, he chops down with the knuckles of the fist at face, drawing right hand back and down.

Count 3, he uppercuts with right, left coming back for guard.

This exercise is repeated for eight counts.

LESSON VI

Review quickly all previous exercises.

22. Straight Front Position:

The command is: 1. Straight front. 2. POSITION.

Step to the left with left foot so the feet and legs are in straddle position, heels about 10 inches apart, knees and body also slightly bent forward, facing opponent; fists clenched start uppercutting to opponent's body—16 counts—8 each hand.

23. Change from Straight Front to Boxing Position:

The command is: 1. Straight front position to boxing position. 2. ADVANCE.

Count 1, man steps forward with left foot into boxing position.

Count 2, he steps forward with right foot into straight front position (feet apart on same line sideward, elbows near sides, fists forward).

This exercise to be repeated for eight counts.

24. Boxing Position to Cover:

The command is: 1. Platoon. 2. COVER.

This is taken from any boxing position.

The man leans forward, left arm bent across solar plexus and shoulder covering left jaw with the chin held down, right protecting right side of body and face, watching opponent for an opening and suddenly lashing out, with a quick left hook returning to cover.

25. Recover to Boxing Position:

The command is: 1. Platoon. 2. BOXING POSITION.

The man should return to boxing position by taking two steps back with right foot, following with left.

LESSON VII

Review quickly for 1 minute exercise 12, lesson III.

26. Straight Front Position, Hitting Out Left and Right:

The command is: 1. Hit left and right. 2. LEAD.

Count 1, the man hits out straight at opponent with left. This is a quick, snappy blow, hitting straight in front.

Count 2, hits out straight at opponent with right, pivoting a little with the blow, and at the same time drops head a little to avoid counter blows.

This exercise should be repeated for eight counts.

27. Straight Front Position, Hitting Left and Right, Advancing:

The command is: 1. Hit left and right. 2. ADVANCE.

Count 1, the man advances the left foot about 6 inches and at the same time hits out to face with a quick, snappy blow with left hand.

Count 2, recovers left arm for guard and at the same time steps forward about 6 inches with right foot and hits hard and straight with right hand.

This exercise is repeated for eight counts.

LESSON VIII

Review quickly some of the previous lessons.

28. Walk Shift:

The command is: 1. Walk shift. 2. SHIFT.

Count 1, from boxing position the man steps forward with right foot, at the same time swings the right hand forward with a blow for the jaw, swinging the body with the blow.

Count 2, he shifts into boxing position.

This exercise is repeated for eight counts.

29. Walk Shift, Right Cross, and Left and Right Swing:

The command is: 1. Walk shift, right cross, and left and right swing. 2. SHIFT.

Count 1, the man steps forward with right foot and drives straight right for jaw.

Count 2, he hits out at opponent with left swing, bringing his left foot into boxing position.

Count 3, he hits out at opponent with right swing, pivoting and advancing right foot.

This exercise is repeated for eight counts.

30. Shift and Walk Shift with Left at Solar Plexus:

The command is: 1. Shift and walk shift. 2. SHIFT.

Count 1, from ordinary boxing position, the man shifts to right boxing position, avoiding opponent's left lead.



FIGURE 11.—Right uppercut to body—slip opponent's lead to right, leaning forward, and bringing up right, palm up, to opponent's heart region.



FIGURE 12.—Right uppercut to jaw—as opponent comes forward with left swing, pivot from hips, slipping inside, and at same time bringing uppercut, palm up, to opponent's jaw.



FIGURE 13.—Right cross counter—step outside opponent's lead, and as blow falls short, cross right straight to head.



FIGURE 14.—Blocking straight left to head—padded side of glove is placed against jaw and blow caught in palm of hand like a ball.



FIGURE 15.—Blocking left hook to head—hand is simply raised from boxing position to ward off opponent's blow.



FIGURE 17.—Blocking straight right to head—padded side of glove is placed against jaw and blow is caught by open palm as head tilts away from blow.



FIGURE 16.—Blocking left hook to body—elbow is dropped to block blow as it approaches target.



FIGURE 18.—Blocking right to body—left arm is dropped against left side, crooked at the elbow so it can guard both solar plexus and heart region.

Count 2, steps forward with left foot, striking with left at solar plexus.

This exercise is repeated for eight counts.

LESSON IX

Review quickly some of the previous exercises.

31. Crouch and Right at Solar Plexus:

The command is: 1. Crouch and right body blow. 2. CROUCH.

Count 1, from boxing position, the man crouches in a half squat position to avoid opponent's lead or swing for head.

Count 2, he steps forward with right foot, striking with right for solar plexus.

This exercise is repeated eight times.

32. Crouch and Uppercut, Left and Right:

The command is: 1. Crouch and uppercut. 2. CROUCH.

Count 1, from boxing position the man bends to avoid opponent's lead or swing, tilting head to left side and down.

Count 2, he uppercuts with left hand to liver, as he advances left foot.

Count 3, he uppercuts with right hand to solar plexus.

This exercise is repeated eight times.

33. Advance with Crouch and Uppercut:

The command is: 1. Crouch and uppercut. 2. ADVANCE.

Count 1, from boxing position the man crouches, leaning head to right.

Count 2, he uppercuts with right as the right foot advances slightly.

Count 3, he uppercuts with left as the left foot advances, then right and left, advancing feet at same time for eight counts.

LESSON X

34. One, Two, Three Series:

The command is: 1. One, two, three. 2. LEAD.

Count 1, the man steps forward with left foot and leads straight left to head.

Count 2, he follows with straight right to solar plexus or heart region.

Count 3, he turns and swings uppercut with left to jaw.

This exercise is repeated eight times.

35. Straight Arm, Tactical Uppercut:

The command is: 1. Straight arm, tactical uppercut. 2. LEAD.

Count 1, the man leads with left, deliberately falling short.

Count 2, he swings a very short uppercut with extended left, striking with all four knuckles on right side of opponent's jaw.

This exercise is repeated eight times.

36. Advance Across Ring:

The object of this exercise is to get across the ring the quickest way possible at the sound of the gong and meet opponent before he gets set.

The command is: 1. Travel across ring. 2. ADVANCE.

Count 1, man springs from chair into boxing position (in group formation, this move is executed from position of attention).

Count 2, steps toward opponent, with left hand and foot advanced, gliding with small steps, always keeping right foot not over 12 inches behind.

Count 3, feints with extended left.

Count 4, he drives straight right for jaw.

This exercise is repeated for eight counts.

LESSON XI

Review exercise 12, lesson III.

37. Stepping Outside of Opponent's Left Lead with Rear Foot, Warding Off Blow with Right Hand, Left Uppercut, and Right for Jaw:

The command is: 1. Right sidestep. 2. ADVANCE.

Count 1, man sidesteps with rear foot and brushes off opponent's left lead with right hand.

Count 2, he swings with left for body.

Count 3, he hooks right hand for jaw.

This exercise is repeated for 16 counts.

38. Bombardier Series:

The command is: 1. Bombardier series. 2. LEAD.

Count 1, the man leads straight right to jaw, shifting right foot forward and dropping head as though looking at opponent's feet.

Count 2, he brings left uppercut to opponent's liver.

Count 3, he hooks right quickly to opponent's jaw.

39. Preparation Lefts:

The command is: 1. Preparation lefts. 2. LEAD.

Count 1, man leads left to opponent's face, advancing about 12 inches.

Count 2, he repeats left jab to face, again advancing about 12 inches.

Count 3, he again left jabs to face, again advancing.

This exercise is repeated eight times. Afterward, have men about face and repeat to return to original position.

40. **One-Two Punch:**

The command is: 1. One, two—Punch. 2. LEAD.

Count 1, man steps forward with left foot, and leads left to opponent's head.

Count 2, he follows action of count 1, as though part of same movement, with hard straight right to jaw, blow to land immediately after left hand

has left opponent's face, pivoting from knees for force and reach.

This exercise is to be repeated eight times.

41. **Submarine Series:**

The command is: 1. Submarine series. 2. LEAD.

Count 1, the man slips under opponent's left lead, with straight right to heart region.

Count 2, he at once brings left up to left side of opponent's jaw, pivoting right with hips.

Count 3, he follows with short straight right to opponent's jaw.

Count 4, pivoting right, he brings short hard left uppercut to opponent's liver and returns to boxing position.

This exercise should be repeated eight times.

Chapter IX

WRESTLING AND RELATED COMBATIVES

The activities listed in this chapter consist of individual and group contests of a rough and strenuous nature. Their purpose is to develop endurance, aggressiveness, and resourcefulness in personal combat; to develop proper footwork and weight control; and to time the best moments for the attack in overcoming an opponent. Wrestling itself is a very complicated sport when one gets into its advanced stages, just as is boxing, which is discussed in a separate chapter. In the case of wrestling, however, there are many minor variations which have come to be known as combatives.

WRESTLING

Wrestling is a valuable activity in the Navy Physical Training Program because it serves as

an excellent means of conditioning and at the same time offers the men valuable skills for use in personal combat. Another advantage is that it can be conducted in a small space.

In the wrestling holds and releases that are described, A will represent the aggressor, B the man attacked. Most of the holds described can be taken on either the right or left side. No attempt has been made to go into advanced wrestling tactics; rather, the purpose has been to select the simpler holds in which instruction can be offered to large numbers of men.

Mastery of the following simple wrestling methods will also increase the proficiency of the men in the various combatives that are described later in this chapter.



FIGURE 1.—Wrestling holds.

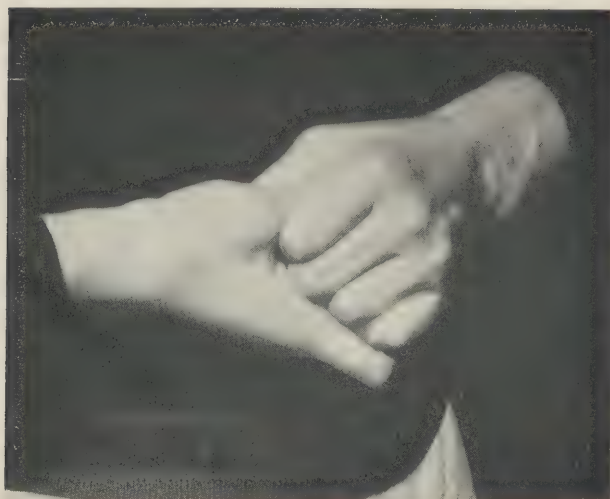


FIGURE 1 (a).—Wrestler's grip—no exposed fingers—looking down.

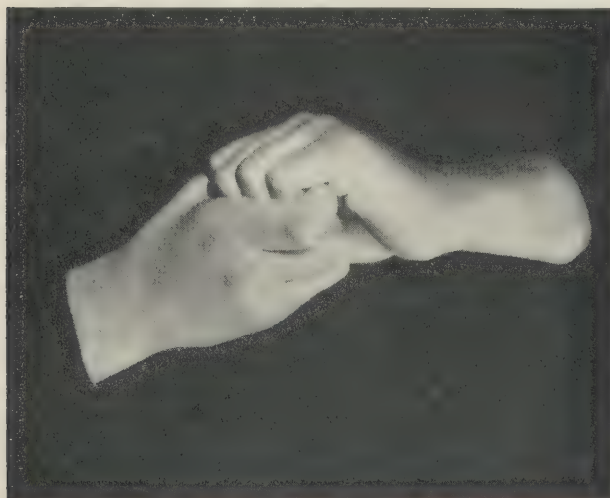


FIGURE 1 (b).—Wrestler's grip—no exposed fingers—looking up.

1. Wrestler's Hand Grip.—The fingers of each hand should be flexed and hooked together, with right palm up and left palm down. Thumb of right hand is placed between thumb and first finger of left hand, and thumb of left hand is tucked inside little finger of right hand. In this way an opponent cannot grasp a thumb or finger, bend it back, and break it. This technique should be used when attempting to hold an opponent around the body (fig. 1 (a), 1 (b)).

2. Referee's Hold.—The contestant's right hand is behind the opponent's neck, and the contestant's left hand grasps the opponents right elbow. Feet are apart and back out of reach, and all joints are slightly flexed. From this position the contestant may pull, push, or maneuver the opponent until he gets an opportunity for securing an effec-

tive hold. From this position many holds may be obtained (fig. 1 (c)).

3. Release From Double Wrist Hold.—If A grasps both of B's wrists with his hands, either with B's hands pointed upward or downward, B brings forearms inward against A's thumbs; if from above, inward and downward; if from below, inward and upward.

4. Front Waist Hold.—From a position of referee's hold, A lifts B's left elbow and slips inside his left arm, wrapping both arms around his waist under his arms. A pushes forward with chin and shoulder and bends B backward to the mat. This works best on a weaker man (fig. 1 (d)).

5. Defense for Front Waist Hold.—To prevent the opponent from grasping around the waist, the contestant should keep inside the opponent's arms with elbows bent. If A succeeds in grasping B's waist, B should move feet well to rear and encircle A's arms with his arms as tightly as possible, pressing against A's shoulders with his chin. If B is strong, A will weaken rapidly and be forced to let go.

6. Maneuvers to Get Behind Opponent.—Two methods are suggested (either may be done to either side, according to which of opponent's arms is forward):

a. Arm Push-Up.—From the position of referee's hold, A, standing, presses B's left elbow upward with right hand, at the same time stepping forward with left foot outside and behind B's left foot. A places left hand in B's crotch and pivots around B on left foot, encircling B's waist with arms. A should keep head away from position over B's shoulders so that B will not be able to reach up, grasp A's head, and throw him over his shoulders.

b. Arm Drag.—A grabs B's left wrist with right hand and pulls left arm across in front of body and to his own left. At the same time A grasps B's left arm near shoulder with his left hand and continues to pull, twisting B to his right and to A's left. A then slips around behind B with right foot and puts right arm around B's waist. The block for this hold is for B to straighten left arm vigorously when A starts to pull it so that A cannot swing around behind him.

7. Rear Waist Hold.—When A is behind B with waist hold, A should lift B from the ground,

quickly throwing him either to the right or left, at the same time knocking his legs from under him with knee.

8. Defenses for Rear Waist Hold.—There are several defenses for this attack from behind:

a. If A does not use wrestler's grip, B may be able to grab one of A's fingers and bend it back.

b. If A uses wrestler's grip, B may press knuckle of second finger of either hand in the interspace between third and fourth fingers (metatarsals) on back of A's hand about halfway between wrist and knuckle. This spot is very sensitive, and if B presses hard with knuckle, A will usually let go.

c. B bends forward and grabs one of A's ankles between B's legs and lifts this leg up to force B to the ground behind him.

d. If lifted off the ground before he can do anything, B may attempt to hook his toes behind A's legs to prevent A from throwing him to the ground.

9. Drop with Leg Trip.—A is standing behind B with arms locked around B's waist, and head resting on side of B's back. A then drops to knees, grabs B's left ankle with left hand, places right leg in front of B's right leg, contacts B's buttock with shoulder, and forces B to trip over A's right leg onto the ground.

10. Reverse Crotch Hold.—A is behind B with arms around B's waist. A suddenly drops downward, bending knees and holding B's waist with left arm, shoves right arm between B's thighs as far as possible, grasping B's belt with right hand. A then grabs B's shirt collar with left hand and, rising to feet, lifts B off the ground, swings B's legs to the right, and throws B to the ground. The lunge between thighs to grasp the belt must be vigorous and "all out."

11. Tackling an Opponent.—If B is standing a little too straight and with legs too close together, A dives forward suddenly, grabs B with both hands around ankles, draws knees toward him, pushes with shoulders, and throws B backward to the ground (fig. 1 (e)).

To block A's dive, B jumps backward slightly, places both hands on A's head or neck, and forces A's head to the ground, at the same time dropping on one knee.

12. Double Outside Leg Hold.—Opponents stand facing each other in referee's position. A takes step backward, pulling B toward him. A



FIGURE 1 (c).—Referee's hold (standing position).



FIGURE 1 (d).—Front waist hold or grizzly hold.



FIGURE 1 (e).—Tackling an opponent (leg dive).



FIGURE 1 (g).—Arm lock (reverse).



FIGURE 1 (f).—Arm lock (straight arm).

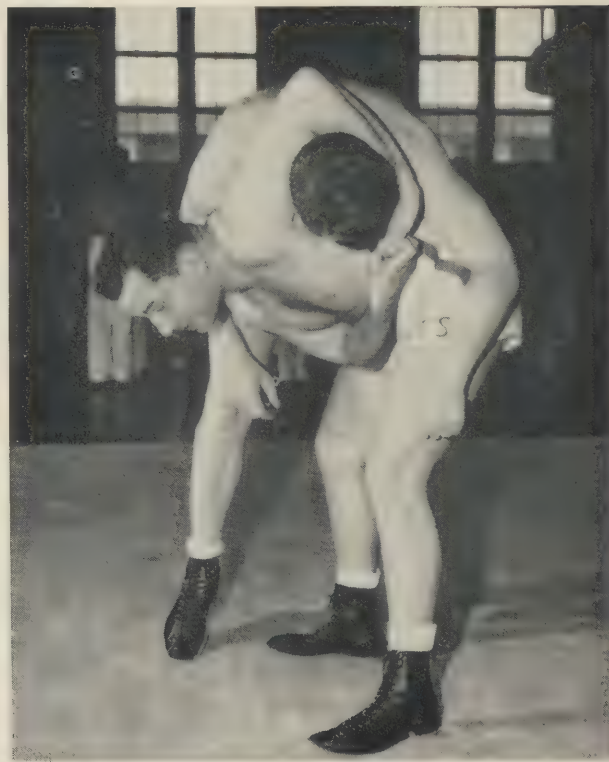


FIGURE 1 (h).—Head and hip lock or cross throw.



FIGURE 1 (i).—Flying mare.

then drops on both knees and drives head past B's right knee, grabbing both of B's legs and locking hands together. A then lifts B and swings B's legs to A's left, throwing A to the ground.

13. Arm Lock.—A grasps B's right wrist with left hand and steps in quickly with right foot, pivoting on left. A's right foot is inside B's right foot. Almost simultaneously A passes right arm over B's right arm close to the shoulder and throws B to the ground over A's right leg (fig. 1 (g)).

To block this, B pushes A's waist with left arm, swings right leg forward, and sits backward before A can twist him off balance.

14. Head and Hip Lock, or Cross Buttock.—A grabs B's right wrist with left hand and pulls B forward, stepping forward and to the left with right foot. A then places left arm around B's head, turning back to B and pulling with right hand and left arm, and throws B forward over his hip (fig. 1 (h)).

To block this, B pushes A's right hip as A starts to turn, keeping A away from him.

15. Flying Mare.—Opponents face each other. A grabs B's right wrist with A's left hand. A steps forward and to the left with right foot, grabs

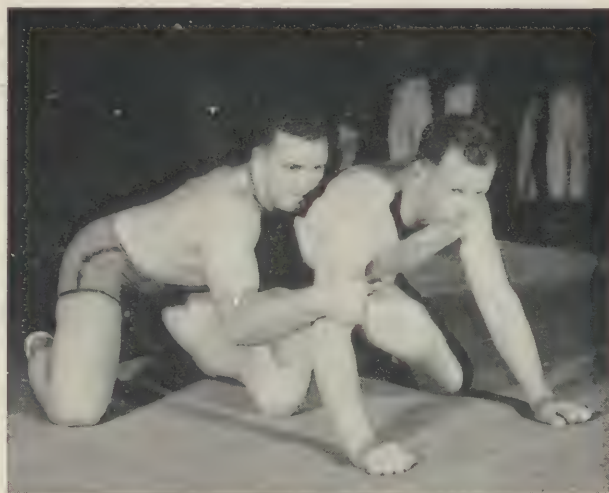


FIGURE 1 (f).—Referee's position on mat.



FIGURE 1 (k).—Hammer lock with half Nelson.

B's right arm above elbow with right hand, and simultaneously turns his back to B with the captured arm over A's right shoulder. A then bends forward abruptly, throwing B over his head (fig. 1 (i)).

16. Tripping.—From position of referee's hold, or while grabbing B's arms, A presses B to one side. A then suddenly reverses the direction of his strain and kicks B's foot from under him or places foot outside B's foot, throwing B over his leg. (For example, if A presses B to A's right, he then reverses the direction and presses him to A's left, and at the same time trips B over A's left foot or kicks B's right foot out from under him with A's left foot.)

17. Referee's Position on Mat.—With B on hands and knees and buttocks settled backward toward feet, knees apart, A kneels by B's right side,



FIGURE 1 (l).—Three-quarter Nelson.



FIGURE 1 (m).—Straight arm.



FIGURE 1 (n).—Hook arm scissors or bar arm scissors.

places left arm around B's waist, and grasps B's right elbow with A's right hand (fig. 1 (j)).

18. **Hammer Lock.**—From referee's position on mat, A forces B off balance to the right and grabs B's right wrist from the inside with right hand. A then places right forearm and elbow against inside of B's right biceps and forces B's elbow forward and hand backward. A has now grabbed B's right wrist with A's right hand and pulled B's right arm out and up his back into a hammer-lock position. B's right hand is now behind B's right shoulder blade (fig. 1 (k)).

19. **Toehold.**—Opponents are in referee's position on mat, A on top. A places right leg across B's left leg, grabs B's left toe with right hand, and pulls B's lower leg up across A's right thigh, at the same time holding B's waist with left arm to keep B from turning out of the way. A may use both hands to pull foot, twisting foot inward.

20. **Toehold with Bar.**—Opponents in referee's position on mat, A on top. A shoves right foot around to B's right side in between B's right arm and right thigh and then back between B's thighs. A then places right lower leg behind B's right knee joint in a sort of grapevine position. A then grabs B's right foot with both hands and forces it against shin, twisting it inward.

COMBATIVES

Combative activities should be a definite part of the physical training. Different ones should be used, with the less strenuous ones tried at first and the more strenuous ones later. Those favored by the men should be given preference over those not so popular. Changes from one activity to another should be frequent in order to sustain interest.

For purpose of organization combatives are divided into dual and group (or team). Many of the dual contests may be given in the usual open-order formation. Until the procedure is understood, the exercises should be conducted to command. Later they should be conducted informally. These activities may be executed in a number of ways, from which the instructor can make the best selection for the particular situation.

INDIVIDUAL COMPETITION

a. No boundaries.

b. *Single circle.*—One man tries either to defeat the opponent within the circle or to eject him from the circle; succeeding in either, he wins.

c. Double circle.—Two circles are drawn one inside of the other, the larger one about 20 feet in diameter and the smaller about 6 feet in diameter. A contestant wins if he throws or otherwise defeats his opponent between the two circles, or if he forces his opponent into the smaller circle or out of the larger circle.

d. Line competition.—A contestant wins if he pulls his opponent across the line between them.

e. Zone competition.—The contestant tries to eject his opponent from a zone, usually from 10 to 20 feet in width.

TEAM COMPETITION

(Method of conducting in each case is similar to that explained under "Individual Competition," except that individual winners are counted to determine the team score.)

a. Members of one team may work with one another to defeat the opposing team by "ganging up" on opponents.

b. Single-circle formation.

c. Double-circle formation.

d. Line formation.

e. Zone formation.

f. Rotating team basis.—After the members of a team have been ranked as nearly as possible according to their ability, they count off. For example, the teams may be numbered from 1 to 10 in the beginning. The No. 1's from each team engage in combat. The loser is immediately replaced by the No. 2 man on his team, who then engages the victor. The victor takes all comers as long as he wins. As soon as he is defeated, he is replaced by No. 2 on his team. This procedure may be continued either until the instructor calls time, or until one man has conquered five opponents in succession. When all of the members of a team have competed, the first member, No. 1, on the team starts again.

LIST OF COMBATIVE ACTIVITIES

1. Wrist Pull.—The men are matched in pairs. They should grasp each other's wrists so that the heels of the hands are in contact. Each contestant attempts to pull his opponent across the line. The event may be conducted with right or left or both hands. (fig. 2).

2. Hop with Wrist Pull.—The men grasp each other's hands and hop on forward foot, attempting to pull each other. The event may be conducted with one or both hands.



FIGURE 1 (o).—Ride hold.



FIGURE 1 (p).—Boston crab or leg split.



FIGURE 2.—Wrist pull.

3. Neck Pull.—The contestant grasps back of opponent's neck with his right hand; the contestant's right foot is forward. He then attempts to pull his opponent out of position. Foot positions are reversed for a left-hand neck pull.

4. One-Hand Chest Push.—The men stand in



FIGURE 3.—Two-hand chest push.



FIGURE 4.—Back-to-back pull.

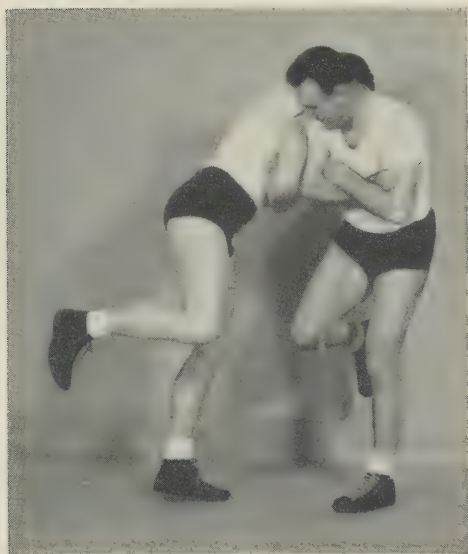


FIGURE 5.—Folded-arms shoulder butt.

pairs. Each man has one hand against the other's chest, each with right foot forward, and attempts to push the other from his position.

5. **Two-Hand Chest Push.**—Same as No. 4, with both hands being used (fig. 3).

6. **Pull from Referee's Hold.**—The men take what is known in wrestling as the referee's hold. The contestant grasps back of opponent's neck with right hand and right elbow of opponent with left hand. In this position the contestant attempts to pull the opponent across a line, out of a circle, or for a given distance (fig. 1 (c)).

7. **Back-to-Back Lift.**—Contestants stand back to back, with elbows locked; each bends forward and by pulling attempts to lift the other off the deck.

8. **Back-to-Back Pull.**—This event is similar to the back-to-back lift, except that each contestant attempts to drag or carry the opponent forward to a line 10 feet away from the midway starting position. The original position of elbows locked must be maintained (fig. 4).

9. **Bulling.**—Position same as in No. 6. The contestant attempts to force the opponent to move one foot by pushing, pulling, or otherwise manipulating him.

10. **Folded-Arms Shoulder Butt.**—The contestant, with arms folded across chest, hops on left foot. He uses right shoulder and right side of chest to butt his opponent. The contestant tries to make his opponent lose his balance and fall, to unfold arms, or to touch free foot to the ground (fig. 5).

11. **Single-Arm Shoulder Butt.**—The contestant grasps left foot with right hand behind right leg, and right arm with left hand; hops on right foot, butting his opponent, trying to force him to let go of foot or arm. A variation of this exercise is to have the left hand hold the left foot and the right hand clasp the left arm (fig. 6).

12. **Stick Pull.**—The contestants grasp a bat or short stick with two hands, and upon the signal each attempts to pull the opponent toward him for an established distance. It is not necessary to have enough sticks for all. If, for example, there are only 10 sticks or softball bats available, 20 men may engage in such contests while the others are doing something else.

13. **Stick Tug of War.**—The men are seated on the ground and have soles of feet in contact; that is, right foot of A is against left foot of B and

vice versa. The contestants grasp the stick and hold it over feet. At the signal each contestant tries to pull the opponent from the sitting position to his feet.

14. Stick Twist.—With right palms upward and left palms downward, the contestants grasp a stick. Upon hearing the signal, each contestant tries to twist the stick to his left (counterclockwise). After several contests of this nature the position of hands is changed, and the stick is twisted to the right (clockwise).

15. Wrist Wrestling.—The men lie on backs, side by side, head to feet, in such a position that the insides of right elbows are side by side; fingers are interlocked. Each contestant tries to press wrist of the other over against his own side. Feet are straight, and other arm is by the side (fig. 7).

16. Stick Wrestling.—Same as in No. 12, except that the contestant wrestles for the stick in an attempt to take it away from the opponent; any means may be used (fig. 8).

17. Hand Wrestling.—The men grasp right hands, with little fingers interlocked; right feet are forward in stride position alongside of each other. Each contestant attempts, by pulling, pushing, making a sideward movement, or otherwise maneuvering, to force the opponent to move one or both feet from the original position. Bouts can be alternated by using left hands instead of right.

18. Hand Wrestling on One Foot.—The contestant stands on left foot holding the opponent's right hand. Each tries to overbalance the opponent or to force him to put free foot to the ground. Pushing with shoulders is not permitted. A modification of this event is to require free foot to be held by free hand.

19. Indian Wrestling.—The men lie on the ground, side by side, with heads in opposite directions. They link right elbows. Upon signal of the instructor or by mutual agreement, each contestant raises right leg, with knee approximately straight, high enough to engage heel of the opponent. In order to time the contest, each contestant usually raises leg three times rhythmically, and the third time engages the opponent's heel, attempting to roll him over backward. Right leg is used for three bouts; then left leg for three bouts, etc. (fig. 9).

20. Circle Tug.—A circle about 4 feet in diameter is drawn on the ground. Eight to ten men lock wrists and form around this small circle.



FIGURE 6.—Single-arm shoulder butt.

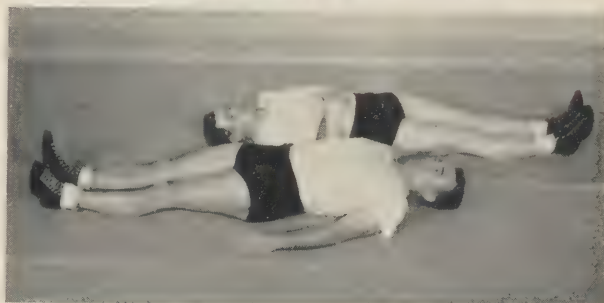


FIGURE 7.—Wrist wrestling.



FIGURE 8.—Stick wrestling.



FIGURE 9.—Indian wrestling.

By pulling, pushing, and making sudden movements, they attempt to force one or more of the men to step into the circle. Anyone forced to touch the ground inside the circle withdraws from it. The others regrasp wrists and continue until only one is left. Those forced out are required to run at full speed to and around some object 50 yards away, and back. When three or four have returned, they form another circle and start over again. Each contestant retiring from the original circle joins the new circle.

21. Mounted Wrestling.—The men contest in pairs. The top man (No. 1) sits astride neck of the bottom man (No. 2); his lower legs are under the No. 2's arms and his feet clasped beside No. 2's back. Two opposing pairs then wrestle, with the object being for one pair of men to unseat the No. 1 man of the other pair or to cause him to touch the deck in any way. If both pairs fall at the same time, the pair whose No. 1 man touches the deck first is the loser. Option: Several pairs of men can form a team. In that case more than one pair can "gang up" on an opposing pair. The last team having men in action wins (figs. 10 and 11).

22. Hog-Tying.—This is a rough contest. The contestant is given a short rope about 4 feet long, which he fastens around his waist in such a way that it can be jerked loose quickly. He attempts to throw the opponent to the ground and to tie his ankles. This may also be conducted as a team activity where a contestant may be thrown by one opponent and tied by the help of others. The one who is doing the tying needs to be on his guard lest an opponent suddenly ties his feet. This type of contest frequently makes a good entertainment as an interlude to boxing or wrestling shows.



FIGURE 10.—Mounted wrestling (start).

It is particularly effective if competitors know something of wrestling or rough and tumble.

23. Wrestling to Lift off Feet.—The contestant maneuvers to grasp the opponent with front or rear waist hold and to lift him off his feet.

24. Wrestling to Touch Deck.—The contestant tries to force opponent to touch the deck with hand, arm, or knee.

25. Set-Hold Wrestling.—The men stand with chests together; left arm of the one over right shoulder of the other, with right arm under left arm of the other, grasping own hands behind the other's back. Three variations are given: (a) Each contestant attempts to lift the opponent from the deck. (b) Each contestant attempts to throw the opponent to the ground. (c) Contestants wrestle until one opponent gets behind and secures a rear waist hold on the other. Holds may be changed after the bout has started.

26. Neck and Elbow Wrestling.—The men take the referee's hold, and they do not let go. The contestant tries to make the opponent touch the deck with any part of body other than feet. Tripping is permissible.

27. Rough and Tumble.—The contestant, by using any hold in any way possible, tries to force the opponent's back to the ground or make him acknowledge defeat. Defeat may be acknowledged verbally or by sharply slapping deck with hand. In this type of wrestling, holds which in amateur wrestling are usually considered to be fouls are permitted. The men should be instructed to give up before the injury point is reached.



FIGURE 11.—Mounted wrestling (in action).

HAND-TO-HAND COMBAT

Hand-to-hand combat includes certain special methods of defending one's self at close quarters, with and without weapons, and of disarming and disabling the enemy. Any means of accomplishing this objective is valuable. It is considered as a special science needing expert instruction, and many manuals on it and related subjects have been prepared. Instruction in its intricate methods is being taught to those men of the Navy who are most likely to have occasion to use close-quarter fighting tactics. In modern naval warfare, how-



FIGURE 12.—Rough and tumble.

ever, most action is at long range. Preference in the physical conditioning program, therefore, is given to all-round developmental activities that can best be administered and taught to large numbers of men in the limited time available. Instruction in hand-to-hand combat is encouraged, however, because of the desirable effect participation in it will have on men in inducing them to maintain a high standard of physical fitness.

RECOMMENDED FILMS

(Obtainable from commandant (director of training) of each naval district.)

MN-1027a. Hand-to-Hand Combat, Part I

MN-1027b. Hand-to-Hand Combat, Part II

MN-1027c. Hand-to-Hand Combat, Part III

Chapter X

TUMBLING

Tumbling is an excellent activity for the development of strength, agility, precision, and balance. Teamwork is also developed when two or more men are involved. The following factors should be considered when tumbling is used in the physical fitness program:

1. When possible, regulation mats should be used. Even if mats are not available, most tum-

bling activities still can be done on various types of surfaces if the instructor uses discretion in their selection.

2. In tumbling instruction, it is essential to begin with the simpler activities and progress to the more difficult. Men should be encouraged to work out different combinations of tumbling activities as they are learned, combining them into series.



FIGURE 1.—Hand-lock grip.



FIGURE 2.—Wrist-lock grip.



FIGURE 3.—Handshake grip.



FIGURE 4.—Thumb-lock grip.

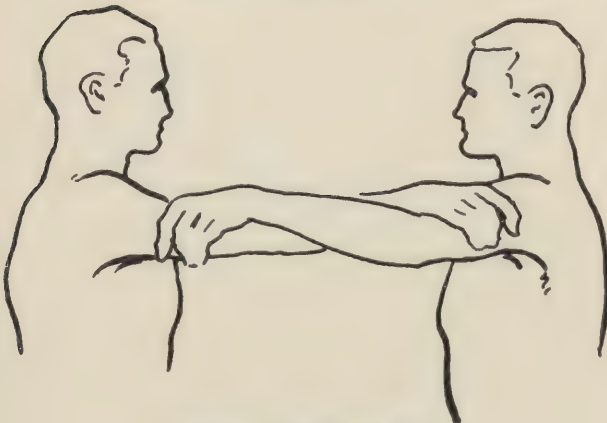


FIGURE 5.—Arm-to-arm grip.



FIGURE 6.—Foot-to-hand grip.



FIGURE 7.—Forward roll.

3. The best plan to use in organizing tumbling is to divide the group into several small sections, each comprising not more than six or eight men. Competent assistants should be selected from the group to be in charge of each one of these small sections. The instructor should move about giving constructive criticism.

4. In more advanced tumbling "spotters" should be used during the learning period. When somersaults or other aerial stunts are practiced men should wear a tumbling belt with ropes at the sides.

Two main types of tumbling are presented: namely, (a) individual and (b) double. Most of the events described are elementary. They are listed in progression from the simple to the more difficult. In giving instruction, the sequence indicated herein should be followed.

NOTE.—The tumbling drawings included here are reproduced by permission of Prentice-Hall, Inc., N. Y., publishers of "The Tumbler's Manual" by LaPorte and Renner.

I. TUMBLING SINGLES

1. Forward Roll: (fig. 7.)

Starting position: Full-knee bend, hands on mat in front of feet.

Procedure: Performer places his weight on hands, bends head forward chin to chest, and rolls forward on back of neck and shoulders. He grasps knees and continues to roll forward in "tuck" position, and rises to standing position.

Several rolls may be done in succession, in which case performer does not rise to feet between rolls but remains in a "semituck" position until the last roll of the series.

2. Squat Stand: (fig. 8.)

Starting position: Full-knee bend, arms inside knees, hands on mat, fingers pointing forward.

Procedure: Performer leans forward, bends elbows outward and rests knees on elbows, raising feet off the deck and balancing on hands only.

3. Backward Roll: (fig. 9.)



FIGURE 8.—Squat stand.

Starting position: Full-knee bend.

Procedure: Performer overbalances backward and places hands on mat about halfway between heels and hips. He now rolls backward and as soon as hips are on the mat, places hands on mat on either side of head, fingers pointed towards hips, and rolls rapidly over backward maintaining a "tuck" position. He pushes hard with hands, rolls over to feet, and rises to a standing position.

Performer may also do this stunt by starting from a stand, knees straight. In this case as he starts to fall backward, he bends forward sharply from hips, and just as hips strike the mat, straightens briskly upward. As soon as hips strike the mat, he continues the roll as described above.

4. Long Dive: (fig. 10.)

Starting position: Standing.

Procedure: Performer runs forward and springs from both feet, diving forward with hips higher than head. Head and shoulders are kept up until hands touch the mat; performer then "tucks," rolls forward over shoulders and back, and grasps knees as in forward roll. He then rises to feet.

The beginner should make progress slowly and at first dive only 2 or 3 feet without running. He gradually increases the speed of his run and the distance of his dive.

5. High Dive:

Starting position: Standing.



FIGURE 9.—Backward roll.



FIGURE 10.—Dive.

Procedure: Performer runs forward and jumps from both feet, diving forward and upward, and keeping head and shoulders higher than feet until the required height is reached. He then bends forward, diving head first downward toward the mat. When hands touch mat he puts full weight momentarily on arms, then “tucks” and rolls as in the forward roll or long dive, rising to feet.

In practicing this dive, one man may kneel or stand with arm out-thrust and the other men dive over. He can thus readily vary the height desired by the performers (similar to fig. 10).

6. Head Stand: (fig. 11.)

Starting position: Body and legs are in crouch position. Hands are on mat, shoulder-width apart, fingers pointing straight ahead.

Procedure: Performer places head at hairline on mat 15 inches in front of hands and kicks upward with rear foot, pushing with hands. Slowly, he brings both feet to the perpendicular position with feet together, toes pointed and back arched.

In the beginning it is easier for the performer to hold the position with the legs dropping downward and knees bent.

7. Round-Off: (fig. 12.)

Starting position: Standing.

Procedure: Performer runs forward and executes a “skip step” with left foot forward, at the same time swinging arms upward. He then puts both hands downward to the mat with right hand 8 to 10 inches in front of left hand and at the same time kicks upward with right or rear leg,

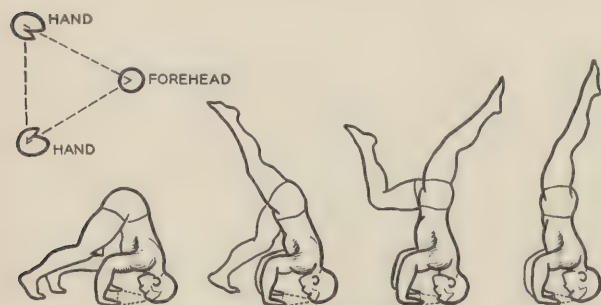


FIGURE 11.—Head stand.



FIGURE 12.—Round-off.

following this immediately with left leg. Both feet swing vertically over head, and body rotates a half turn to the left. Performer then pushes off with hands and snaps feet down to the mat, facing the starting position. He should finish with a jump upward. This movement may be done with either foot forward.

The “skip step” (left foot forward) is a preliminary to many tumbling stunts that begin with a run in which the performer takes off on one foot. It is performed as follows: Performer walks or runs forward several steps; then as right foot strikes the deck, he makes a short, low hop, or skip, on right foot, at the same time raising left leg somewhat forward, and swinging arms forward and upward. Immediately after right foot lands in the hop, left foot is brought down about three feet in front of right, body bends forward, right leg swings backward and upward, and arms swing downward, with hands placed on the deck.

8. Elbow Head Stand: (fig. 13.)

Starting position: Kneeling on one knee, other leg extended somewhat backward, both forearms on the mat, with elbows shoulder-width apart, hands together, palms up.

Procedure: Performer places forehead in hands, kicks rear leg upward, following it imme-



FIGURE 13.—Elbow head stand.

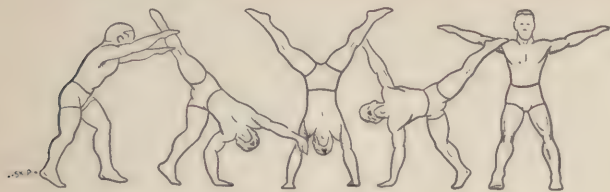


FIGURE 14.—Cartwheel.

diately with other leg, and brings both legs to the vertical position, feet together, toes pointing back arched. The movement should be rather slow, and elbows should be kept separated.

9. Double Elbow Lever:

Starting position: Kneeling on the mat, hands about 6 inches apart with palms down and elbows close together, and abdomen resting on bent elbows.

Procedure: Performer balances his weight (at center of balance) on elbows, leans forward far enough to raise toes off the deck, and straightens body from shoulders to heels, supporting weight on hands alone.

10. Cartwheel: (fig. 14.)

Starting position: Standing.

Procedure: With feet spread and arms extended sideward, performer leans body to right, then rocks to left swinging left hand down sharply to deck (near left foot) and right leg is kicked upward, left leg following immediately. The spread feet pass *through a vertical plane*; first the left hand, then right hand and right foot, and then left foot land on the mat in turn. Hands and feet are evenly spaced like the four spokes of a wheel. Several cartwheels may be done in succession and to either side.

11. Hand Walk: (fig. 15.)

Starting position: Hands on mat, shoulder-width apart, fingers slightly spread and pointing forward; body and feet in crouch position.

Procedure: Performer kicks rear foot upward, followed by other foot until both are vertical. Back is arched, knees are straight, and toes are pointed and together. Performer overbalances slightly forward and takes short steps forward on hands. Head is back, and performer looks at the deck in front of him.

12. Forearm Stand: (fig. 16.)

Starting position: Kneeling in crouch position, one foot forward, forearms on the mat, palms down, hands about 4 inches apart, and elbows shoulder-width apart.

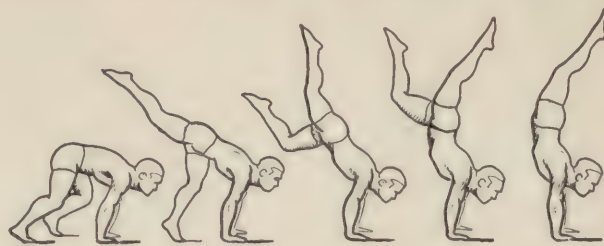


FIGURE 15.—Hand walk.

Procedure: Performer swings rear leg upward, followed by other leg until both are vertical. His back is arched, head bent backward and off the deck, feet are together with toes pointed, and elbows are bent at about right angles.

13. Backward Roll Head Stand:

Starting position: Same as for backward roll (see No. 3).

Procedure: Performer rolls backward with arms extended backward on the mat. As he rolls back, instead of holding the "tuck" position as in the backward roll, he thrusts feet vigorously upward to the vertical. At the same time hands are placed on the mat, fingers pointed toward head, and performer comes to the position of head stand (see No. 6).

14. Forward Hand Spring: (fig. 17.)

Starting position: Standing.

Procedure: Performer runs forward executing a skip step and at the same time swings arms upward and raises forward leg. He then bends trunk forward and puts hands to the mat (close to feet) at the same time kicking other leg upward hard and following immediately with other leg. Elbows are very slightly bent. When hips reach a point about 6 inches in front of hands, performer pushes up hard with hands, arches back, and lands on feet. If there is a tendency to fall backward, performer should bend forward at hips and bend knees just as feet touch the deck.

15. Snap-up: (fig. 18.)

Starting position: Lying (face up) on mat



FIGURE 16.—Forearm stand.



FIGURE 17.—Forward hand spring.

with legs backward over head, hands on mat on either side of head, fingers pointed toward shoulders, knees straight.

Procedure: Performer starts to roll forward and extends legs upward and forward (45° angle) pushing hard with head and shoulders. As body rises off the mat, performer bends knees, arches back, and lands on feet. This exercise may be done with hands placed on the front of the thighs with most of the drive from the mat coming from head and shoulders.

In learning the stunt, performer will find it helpful to bend knees and to bend forward sharply at hips just as feet touch the mat.

16. Flop-over:

Starting position: Front-leaning support, body straight from shoulders to feet, arms straight downward, and weight on hands and toes.

Procedure: Hips are permitted to sag downward and elbows are slightly bent. Hips are then thrown upward vigorously; performer pushes hard with arms, and jumps from the mat rotating body laterally until he lands face down after making a 180-degree turn.

17. Hand Stand:

Starting position: Hands, shoulder-width apart, on the mat, with fingers slightly spread and pointing forward; body and legs in crouch position.

Procedure: Rear leg is kicked upward, immediately followed by other leg. Shoulders first lean forward ahead of hands, and as legs rise, come back to a position directly over hands. Back is

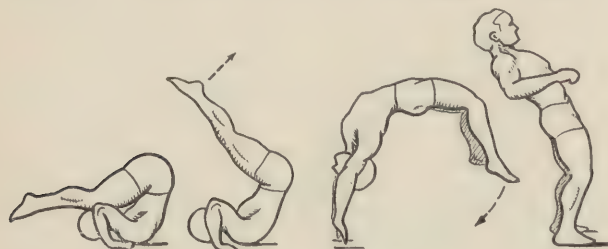


FIGURE 18.—Snap-up.

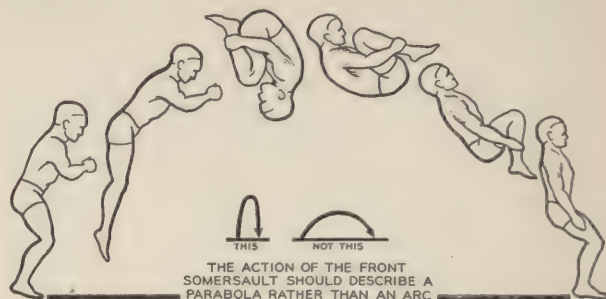


FIGURE 19.—Running front somersault.

arched, legs together, toes pointed, and eyes focused on a spot about one foot ahead of hands. If performer starts to overbalance forward, he presses down hard with fingers, extends elbows vigorously, and lets legs arch slightly over back. If he starts to overbalance backward, he puts the weight on heels of his hands, bends elbows slightly, and permits head and shoulders to move forward.

18. Running Front Somersault: (fig. 19.)

Starting position: Standing.

Procedure: Performer runs forward and jumps onto both feet, with arms forward and upward, elbows half bent. Upon alighting on the mat, he jumps upward, swinging arms and head downward, tucks legs hard, grasping ankles with hands, and turns forward in the air. When the turn is nearly complete, he lets go of ankles, straightens legs and body, and lands on feet.

19. Bucking Bronco: (fig. 20.)

Starting position: Standing.

Procedure: Performer jumps upward, bending body forward, and alights on hands in a near hand-stand position, with knees bent. He holds this position momentarily and snaps feet downward to the mat, pushing hard with hands and alights on feet, bent slightly forward.

20. Back Hand Spring: (fig. 21.)

Starting position: Standing, with knees slightly bent, body erect, and arms forward.

Procedure: Arms are swung downward and backward. Knees are bent, and performer leans somewhat backward in a position much like that of sitting on a chair, with trunk bent forward.



FIGURE 20.—Bucking bronco.



FIGURE 21.—Back hand spring.

As he loses his balance backward, he throws arms vigorously forward, upward, and backward, at the same time arching back and extending knees. The momentum of the arm swing carries him around backward so that he alights on hands with arms almost straight in hand-stand position. He then snaps legs down and lands on feet. (This event should always be practiced at first with a tumbling belt or with a man on either side holding the performer's belt with one hand.)

21. Back Somersault: (fig. 22.)

Starting position: Standing, with knees slightly bent, body erect, and arms forward.

Procedure: Performer swings arms down past the side and bends knees to about a half-squat position. Body is kept balanced and upright. Performer then swings arms forward, upward, and backward, springing vigorously upward and slightly backward. He then tucks legs, grasps ankles, and makes a backward somersault in the air in this position. When the turn is almost complete, he lets go of ankles, straightens legs and body and alights on feet. (This event should be practiced at first with tumbling belt or expert spotter.)

II. TUMBLING DOUBLES

In double tumbling, the men work in pairs (some combination stunts are done with three or more men). When two men work together they are usually known as the "top man" and "bottom man." The "bottom man" is sometimes known as "the thrower." The top man performs the "tumbling" while the bottom man gives support or provides the force for the movement. In general, the bottom man should be somewhat heavier and stronger than the top man, though two able performers who are sufficiently strong may alternate at top and bottom. In the descriptions that follow the top man is called No. 1 and the bottom man No. 2.

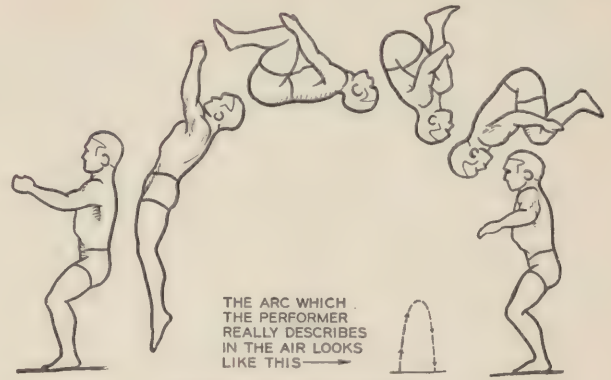


FIGURE 22.—Back somersault.

To insure perfect coordination of the movements, the two men use pre-arranged signals, such as "One" and "Two" or "Allez-ooop." It should always be made clear whether the top man is to go through with the stunt or merely to try for timing.

1. Leap Frog and Roll: (fig. 23.)

Starting position: Top man (No. 1) about 4 feet behind bottom man (No. 2), both facing the same direction. Both stand with knees slightly bent and forearms resting on thighs just above knees.

Procedure: No. 1 performs a straddle vault over No. 2. When he lands on the mat, both simultaneously execute a forward roll rising to the starting position. No. 2 then vaults over No. 1, and both repeat the roll.

2. Rock or Seesaw: (fig. 24.)

Starting position: Top man (No. 1) sitting on mat, with knees slightly bent and feet on the deck; bottom man (No. 2) facing him, sitting on No. 1's feet, with legs over No. 1's thighs and feet

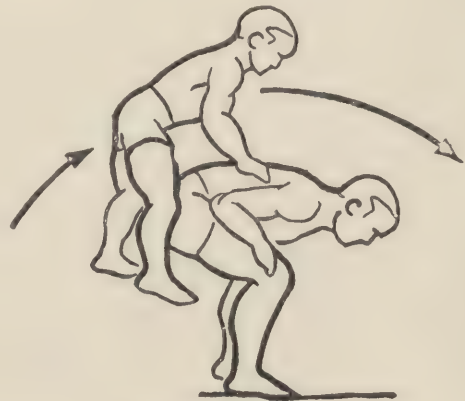


FIGURE 23.—Leap frog and roll.



FIGURE 24.—Rock or seesaw.

on mat under No. 1's buttocks, each grasping the other's shoulders with hands.

Procedure: No. 1 rolls backward pulling No. 2 to a bent-knee stand. No. 2 then rocks backward pulling No. 1 to a bent-knee stand.

3. Elephant Walk: (fig. 25.)

Starting position: Standing face to face.

Procedure: Top man (No. 1) places hands on bottom man's (No. 2) shoulders, jumps high astride No. 2's waist, and locks feet behind No. 2's back. No. 1 then leans backward and thrusts head and shoulders through No. 2's legs, grasping No. 2's ankles from behind, and extends elbows. No. 2 at the same time bends forward, places hands on the mat, and walks forward on all fours, carrying No. 1.

4. Camel Walk:

Starting position: Top man (No. 1) standing 3 feet in front of bottom man (No. 2), both facing the same direction.

Procedure: No. 1 bends forward, places hands on the deck, and with No. 2's assistance, clasps legs around No. 2's waist locking feet behind. No. 2 bends forward and places hands on the ground, and No. 1 ducks between legs and places hands on No. 2's ankles from behind. No. 2 then walks forward carrying No. 1. (Similar to elephant walk except man is carried face up.)

5. Monkey Walk: (fig. 26.)

This is the same as the camel walk except that when top man (No. 1) ducks through bottom man's (No. 2) legs, instead of grasping ankles, he wraps his arms around No. 2's hips.

6. Ankle Pick-Up: (fig. 27.)

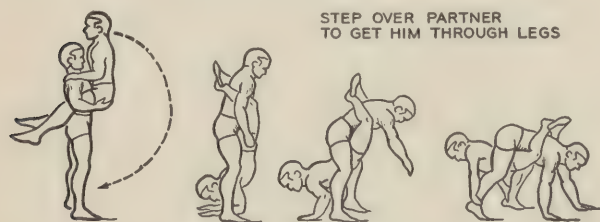


FIGURE 25.—Elephant walk.



FIGURE 26.—Monkey walk.

Starting position: Top man (No. 1) lying on back, with hands behind shoulders on mat, fingers toward shoulders and legs vertical; bottom man (No. 2) standing at No. 1's hips, facing No. 1 and grasping No. 1's ankles.

Procedure: No. 2 pulls No. 1's legs upward, and then pushes them outward while No. 1 straightens body and hips, and pushes up with hands. As No. 2 releases No. 1's ankles, No. 1 performs a snap-down landing in standing position, facing No. 2.

7. Double Roll: (fig. 28.)

Starting position: Bottom man (No. 2) lying on back, legs upward, knees bent, feet apart about 11½ inches; top man (No. 1) standing with feet spread and on either side of No. 2's head; each clasping the other's ankles.

Procedure: No. 1 dives forward and executes a forward roll over No. 2's feet on the mat with hands. No. 2's knees should remain slack and should be bent. As No. 1 dives, he pulls No. 2 over. No. 2 then dives and rolls over No. 1 in the same manner. The movement is continued for as many rolls as are desired. When reaching the end of the mat the men retain the same position and execute a number of rolls backward. In executing the backward roll, the man starting backward pulls hard on his partner's ankles.

8. Back-to-Back and Over: (fig. 29.)



FIGURE 27.—Ankle pick-up.



FIGURE 28.—Double roll.

Starting position: Standing face to face at a distance of 4 feet, arms forward, grasping each other's hands.

Procedure: Retaining the grasp, the men turn under one arm until they are back to back, arms locked. The bottom man (No. 2) crouches slightly and bends forward, pulling top man (No. 1) backward over back. No. 1 lifts feet, "tucks" slightly, and rolls backward over No. 2's back, dropping to the deck, facing No. 2. Hands remain clasped. The exercise is repeated, No. 1 pulling No. 2 over his back.

9. Roll and Dive:

Starting position: Both men on hands and knees, about 6 feet apart, facing the same direction and crosswise to the mat.

Procedure: Bottom man (No. 2) rolls sideward toward top man (No. 1), who dives diagonally over him and rolls sideward. No. 1 then rolls toward No. 2, who dives over him.

10. Triple Roll and Dive: (fig. 30.)

This is the same movement as roll and dive above, except that three men are engaged. The middle man rolls out, and the end man dives in and rolls out. For example, if the three men are numbered No. 1, No. 2, and No. 3 then No. 2 rolls toward No. 1 who dives over No. 2 and rolls toward No. 3. Then No. 3 dives over No. 1 and rolls toward No. 2 who dives over No. 3, and so on.

11. Over-and-Under Dive:

Starting position: Standing face to face, at a distance of 8 feet.

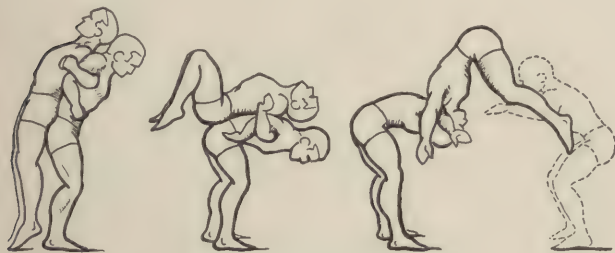


FIGURE 29.—Back-to-back and over.



FIGURE 30.—Triple roll and dive.

Procedure: Bottom man (No. 2) executes forward roll, with legs spread widely apart. Top man (No. 1) dives through No. 2's legs as No. 2 is rolling and executes a forward roll. Both rise to feet and turn about face to face, and repeat with No. 2 diving through No. 1's legs.

12. Hand Balance and Pull-Over: (fig. 31.)

Starting position: Top Man (No. 1) standing 5 feet behind bottom man (No. 2) both facing the same direction.

Procedure: No. 1 does a handstand directly behind No. 2. Then No. 2 grasps No. 1's ankles over shoulder and leans forward. No. 1 rises to a sitting position on No. 2's back. No. 2 straightens up and pulls No. 1 to sitting position astride shoulders. No. 2 then leans forward permitting No. 1 to slide forward to a standing position on the mat. The exercise is repeated with No. 1 pulling No. 2 over.

13. Neck Lift:

Starting position: Bottom man (No. 2) standing 3 feet behind top man (No. 1), both facing the same direction.

Procedure: No. 2 bends knees and bends trunk forward, putting head between No. 1's legs. No. 2 places hands or forearms on his own knees. No. 1 bends backward, placing hands on No. 2's shoulders, and at the same time No. 2 raises up and No. 1 rolls backward over back, dropping to a standing position behind him. They repeat, reversing positions. When the men have learned this stunt, No. 1 can roll backward, with hands over head. No. 2 should raise up vigorously and toss No. 1's hips with shoulders.

14. Knee Roll: (fig. 32.)

Starting position: Bottom man (No. 2) on back,

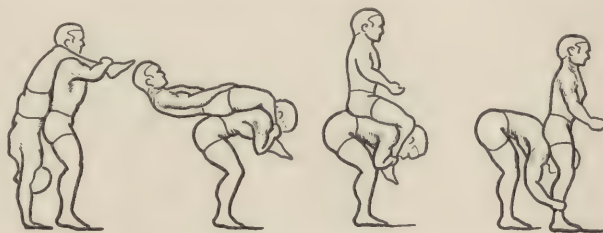


FIGURE 31.—Hand balance and pull-over.



FIGURE 32.—Knee roll.

legs drawn up, arms by sides; top man (No. 1) standing facing No. 2 about 10 feet away from his feet.

Procedure: No. 1 approaches with moderate speed, places hands on No. 2's knees, makes a little dive, and begins to roll across No. 2. Then No. 2 places hands on No. 1's shoulder blades as he comes rolling across, and pushes upward and backward. This push supports No. 1's body in "half-tuck" position and carries No. 1 over to his feet, half crouched. This is a roll, not a hand spring.

15. Shoulder Balance:

Starting position: Same as in knee roll.

Procedure: Top man (No. 1) places hands on bottom man's (No. 2) knees, and leans forward putting shoulders in No. 2's hands. No. 1 straightens arms and kicks up to a shoulder stand, with hands on No. 2's knees and shoulders in No. 2's hands. No. 2's arms should be straight, and legs steady.

16. Belly Balance:

Starting position: Bottom man (No. 2) on back, with legs upward; top man (No. 1) on mat at No. 2's hips, facing No. 2.

Procedure: No. 2 turns toes outward. No. 1 grasps No. 2's ankles and places No. 2's feet on No. 1's abdomen. He then releases No. 2's ankles and grasps No. 2's hands. No. 1 then leans forward putting his weight on partner's feet and



FIGURE 33.—Shoulder mount.



FIGURE 34.—Backward roll over feet and hands.

pulls with his arms. No. 2 straightens knees, raising No. 1 to an arched position.

17. Shoulder Mount: (fig. 33.)

Starting position: Partners standing face to face, about 4 feet apart, hands clasped with arms crossed. (Hand position: Left hands are grasped as in shaking hands; both men turn right hands inward and then forward toward the other person and grasp hands.)

Procedure: Bottom man (No. 2) separates feet and bends knees until left thigh is almost horizontal. Top man (No. 1) places left foot on No. 2's left thigh near hip with toes pointed outward. No. 1 then steps in as close as possible and using No. 2's left thigh for a step, steps upward and places right foot on No. 2's right shoulder. Both men face the same direction. No. 2 then straightens up and No. 1 places left foot on No. 2's left shoulder. No. 1 brings knees together; No. 2 bends head backward against No. 1's shins, and grasps No. 1's calves just below knees. No. 1 straightens up.

In stepping up, No. 1 should have his center of weight as close to No. 2 as possible. No. 2 helps with arms, and sees to it that his own arms are well away from head so that there is ample room for No. 1's feet.

From that position both men start to fall forward and fall slowly until at an angle of about 45 degrees to the deck. No. 1 then drops off and just as he hits the deck, both men perform forward rolls.

After having mounted to the two-high position, No. 2 may, if he wishes, walk forward to the other end of the mat and turn around before performing forward dismount.

18. Backward Roll Over Feet and Hands: (fig. 34.)

Starting position: Bottom man (No. 2) lying on back, legs upward, knees bent, and arms verti-



FIGURE 35.—Knee shoulder spring.

cal; top man (No. 1) standing with back to No. 2, feet at No. 2's hips.

Procedure: No. 1 leans backward, placing No. 2's feet under No. 1's buttocks. As No. 1 rolls over backward, No. 2 places hands on No. 1's shoulders, at the same time pushing with feet. No. 1 rolls over backward and snaps feet downward to standing position.

19. Knee Shoulder Spring: (fig. 35.)

Starting position: Bottom man (No. 2) lying on back, knees flexed, feet on mat; top man No. 1) standing facing No. 2 about 15 feet away from his feet.

Procedure: No. 1 runs forward, executes a skip step, places hands on No. 2's knees, and lands in a standing position beyond No. 2's head. No. 2 supports No. 1's shoulders if necessary.

20. Armpit Pick-Up: (fig. 36.)

Starting position: Top man (No. 1) lying on back; bottom man (No. 2) standing close to shoulders. Both men are grasping hands.

Procedure: No. 1 rolls backward, throwing legs up and under No. 2's arms. No. 2 at the same time leans forward. No. 1's knees are now against No. 2's armpits and No. 2's arms cross No. 1's thighs just above knees. No. 2 now straightens up and both pull with arms. This lifting is done with a throw, and No. 1 is swung toward an upright position and drops gracefully to feet. At the peak of this swing, No. 2 moves forward slightly under No. 1 for better support.

21. Planche: (fig. 37.)

This stunt may be done in two ways.

Starting position: Top man (No. 1) standing about 3 feet in front of bottom man (No. 2) both facing the same way.

Procedure: In one method, No. 2 grasps No. 1's hips, and as No. 1 jumps upward slightly, No. 2 assists the jump, and No. 1 jumps to position with feet on No. 2's thighs just above knees, No. 2



FIGURE 36.—Armpit pick-up.

at the same time bending knees to a half-squat. No. 2 then leans backward and No. 1 leans forward, No. 2 grasping No. 1's legs just above knees. In the second method, No. 2 places head between No. 1's legs and raises him up astride his neck. No. 1 then places feet on fronts of No. 2's thighs, No. 2 takes head from under No. 1 and grasps No. 1's legs. To dismount, No. 1 jumps off.

22. Groin Pitch:

Starting position: Bottom man (No. 2) lying on back, legs up, knees back, feet turned outward, arms vertical; top man (No. 1) standing facing No. 2 close to hips. Partners grasping hands.

Procedure: No. 1 leans forward, No. 2 kicks upward and backward, throwing No. 1 in forward hand spring over head. No. 1 lands, standing sufficiently away from No. 2's head.

23. Hand Stand, Back Roll Across Back:

Starting position: Top man (No. 1) facing end of mat close to end; bottom man (No. 2) standing slightly to one side.

Procedure: No. 1 swings to hand stand and separates thighs. No. 2 steps between No. 1's legs, with back to No. 1's crotch, and pulls No. 1's crotch just over hips. He then grasps back of No. 1's ankles with hands. No. 2 now bends forward sharply, pushing No. 1's ankles down toward deck. No. 1 simultaneously bends backward and rolls backward over No. 2's back. As the feet

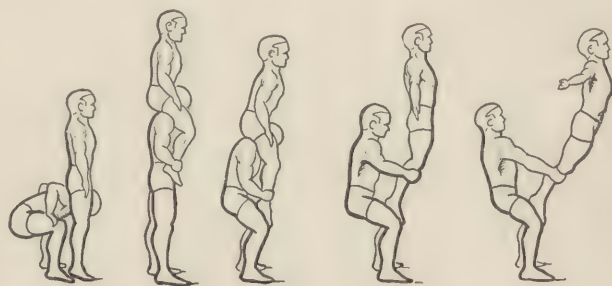


FIGURE 37.—Planche (Second method).

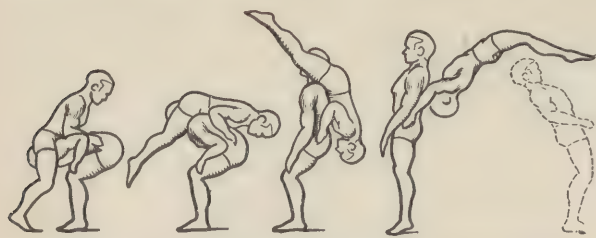


FIGURE 38.—Hand spring from thrower's hips with kick lift.

come over in the back roll, No. 2 straightens shoulders upward suddenly, lifting No. 1 so that No. 1 lands on feet facing No. 2.

24. Snap-Out:

Starting position: Top man (No. 1) lying on back of neck and shoulders, knees bent and thighs drawn up against abdomen; bottom man (No. 2) straddling No. 1, facing toward No. 1's feet; partners grasping hands.

Procedure: No. 2 pulls upward and forward as No. 1 extends legs forward and upward. No. 1 arches back and lands in standing position. This must be a hard throw.

25. Hand Spring from Thrower's Hips with Kick Lift: (fig. 38.)

Starting position: Partners standing face to face with feet apart.

Procedure: Bottom man (No. 2) bends forward and places head between top man's (No. 1) legs. No. 1 leans forward and places hands on back of thrower's hips, No. 2 raises up, and No. 1 executes hand spring from No. 2's hips and lands in standing position.

26. Back Somersault with Leg: (fig. 39.)

Starting position: The top man (No. 1) standing sideways in front of bottom man (No. 2) with near leg raised to a horizontal position. One hand of No. 2 is above No. 1's ankle, and other hand is under middle of No. 1's thigh. No. 1's near hand on No. 2's shoulder.



FIGURE 39.—Back somersault with leg.

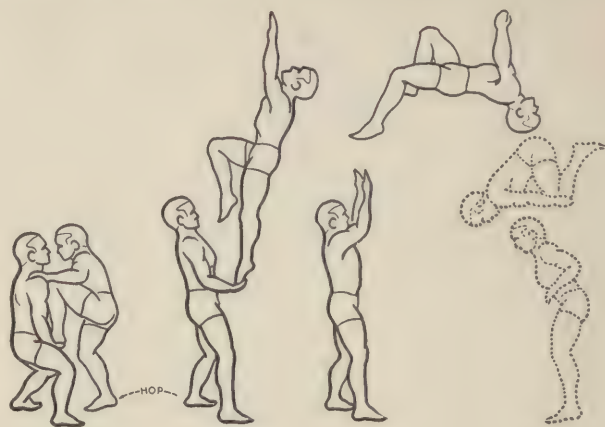


FIGURE 40.—The pitch.

Procedure: No. 1 does back somersault, springing from standing leg. No. 2 lifts No. 1's leg, and No. 1 offers resistance by pushing leg downward against No. 2's hands.

27. The Pitch: (fig. 40.)

Starting position: Partners facing each other, about 10 feet apart.

Procedure: Bottom man (No. 2) separates feet, bends knees slightly, places right hand within left hand, holding both hands just in front of and below belt. Top man (No. 1) walks forward, places left foot in No. 2's hands. No. 1 then springs upward and slightly backward, stepping downward vigorously with left foot. No. 2 lifts up and away, throwing No. 1 in back somersault.

28. Forward Somersault with Assistance from Behind: (fig. 41.)

Starting position: Partners facing the same direction, 3 feet apart, bottom man (No. 2) behind.

Procedure: Top man (No. 1) bends left knee to a right angle. No. 2 grasps No. 1's left ankle with both hands and supports No. 2's downward push. No. 1 then turns front somersault, kicking

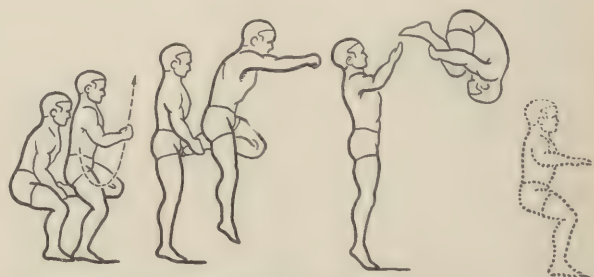


FIGURE 41.—Forward somersault with assistance from behind.

backward against No. 2's hands with left foot. No. 2 lifts and turns him forward. Note: If No. 1 turns too far he should quickly duck into a front roll.

29. Back Somersault from Hands:

Starting position: Bottom man (No. 2) sitting on deck, feet apart, hands between legs on deck, palms up; top man (No. 1) standing on No. 2's hands with fore part of feet.

Procedure: No. 1 turns back somersault. No. 2 assists him by throwing hard with both hands.

30. Elbow Pitch:

Starting position: Bottom man (No. 2) bent forward, feet apart, hands on knees, elbows out; top man (No. 1) facing No. 2, 1 foot away.

Procedure: No. 1 straddles No. 2's neck and places hands on No. 2's elbows. No. 2 then lifts up, No. 1 ducks forward and does hand spring from elbows of No. 2.

RECOMMENDED FILMS

(Obtainable from commandant (director of training) of each naval district.)

MN-2089a. *Tumbling for Physical Fitness—Individual Stunts*

MN-2089b. *Tumbling for Physical Fitness—Companion Stunts*

Chapter XI

GROUP GAMES

Group games, sometimes called mass games, are of such a nature that (1) large numbers of men may participate at one time and (2) everyone may get vigorous exercise. They should be so conducted that they keep all the men active. Usually, it will be necessary to divide the men into small groups, each group playing independently. With games of low organization, interest cannot be sustained for very long.

Group games are usually played in circle or line formations. They afford considerable running and dodging, tussling and holding. For purposes of organization the playing areas should be well defined. In games where balls are thrown there should be either a backstop or extra players to retrieve the balls that are thrown wild in order to save time and speed up the action.

1. Charger.—Any number of men may play this game at the same time. Two boundary lines, 30 to 50 yards apart, are marked off. The two sides of a football field may be used. One man is designated as the spotter who is placed in the center of the playing area. All the men are lined up on one of the two boundary lines. The spotter calls "Charge," whereupon everybody must advance by walking or running across the field to the other boundary line. The spotter attempts to catch one or more of these men by striking them

on the back. All the men who are caught assist the original spotter to catch the other men on the successive runs. As soon as all of the uncaught men have reached their goal, the spotter again calls "Charge," and they run back to the original goal. This goes on until the last man has been caught. The first man caught becomes the spotter for the next game (fig. 1).

2. Tackle Charger.—This game is played in almost the same way as Charger, except that the spotter carries a "club" (a heavy towel doubled and bound with cord). The spotter catches the running men by striking them with the "club." On successive runs the "caught" men attempt to "capture" others by tackling them and holding them until the spotter comes and strikes them with the "club" making the "capture" official. This is a very vigorous game.

3. Wrestle Tag.—With the exception of two men the group pairs off in circle formation, each pair being approximately 8 or 10 feet apart. The rear man of each pair clasps the front man around the waist. Of the two extra men one (A) chases the other (B). B tries to get in front of



FIGURE 1.—Charger.



FIGURE 2.—Line charging.

one of the pairs, and the front man of that pair tries to aid B by grabbing B around the waist. If B succeeds in getting in front of a pair, the third, or rear, man now becomes the one chased and attempts to get in front of some other pair. In every case the front man of the pair attempts to aid the man being pursued by grabbing him around the waist. The rear man of a pair attempts to prevent this by swinging the front man around out of the way of the man being chased. The game itself becomes a series of struggles between the rear and the front man of each pair as well as a running match between A and B.

4. Bull in the Ring.—The players form a circle and interlock wrists with each other. Inside the circle is the "bull." At the signal, the bull attempts to break out of the ring by charging at the players' arms so that their locked wrists are forced apart. When the bull finally is successful in breaking out, the other players chase him, attempting to catch him. The player who catches him becomes the next bull and takes his place in the center of the ring.

5. Line Charging.—Two teams of men form two lines opposite each other, much as in a football game. The two lines should be about 1 foot apart, and the individual men about a foot apart laterally. Upon the sound of the whistle, team A attempts to break through the line of team B. Team B blocks in every conceivable way, except by holding. Team A may use its hands; team B may not. Team A may not go outside the end men on team B. After from 3 to 5 seconds, the instructor blows his whistle, and the number of

men who have broken through are counted. The procedure is then reversed, with team B attempting to break through team A. The winner is the team that has the larger number of men who have broken through the opponents after five innings. In indoor competition this may be conducted on mats (fig. 2).

6. Milling the Man.—From 8 to 12 men form a close circle. They are seated and face in (fig. 3). One man stands inside the circle. He stiffens his body, with arms close to sides. He falls toward someone in the circle, who must push him away so that he will not fall to the ground or upon the seated player. The man is thus pushed back and forth in the ring until someone fails to keep him upright. The man thus failing is penalized by exchanging places with the man in the circle.

7. Bridge Breaker.—A popular game with the stunt element in it. There are 12 to 15 members of a team. One well-braced man (No. 1) faces his team and acts as a support for the formation (fig. 4). A second man bends over, with his back parallel with the ground, and clasps his arms around No. 1's waist. A third player bends over No. 2 and clasps him in the same manner. No. 4 does the same to No. 3; No. 5 to No. 4; and No. 6 to No. 5. The remaining players of the same team line up about 10 feet behind these 6 men who constitute the bridge. In turn they run and jump upon the bridge, and the game continues as long as it remains upright. The game is won by the team which has carried the greatest load before it collapses.

8. Bronco Busting.—Opponents of approximately equal weight are paired off as broncos and riders. The broncos bend over and place hands on ground. The riders sit on the backs of the broncos and clamp their legs against the broncos' sides. The broncos then try to buck



FIGURE 3.—Milling the man.

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FIGURE 4.—Bridge breaker.



FIGURE 5.—Bronco busting.

the riders off, and win if they succeed within the time limit. The men alternate as broncos and riders. Three 1-minute innings are allowed each team. The team that retains the greatest number of riders on the broncos is the winner (fig. 5).

9. Pull for Shore.—Three parallel lines are drawn 5 yards apart and at least 50 feet long. The men are arranged as in company front on the middle line, and they count off by twos, with the even numbers doing an about-face. Alternate men are now facing in opposite directions. They now link elbows. The object is for each team to go in the direction it is facing and to take the opposing team across the line 5 yards away (fig. 6).

10. Tug of War.—A rope, preferably 150 feet in length and $1\frac{1}{2}$ inches in diameter, is stretched so that the midpoint rests halfway between two lines which have been marked on the ground 5 yards apart and at right angles to the rope. A 2-inch band of adhesive tape is placed at the midpoint of the rope. At the signal each team pulls. The winner is the team which pulls the tape mark on the rope over its own (nearer) line. A contest equals three out of five pulls (fig. 7).

11. Line Rush.—Two lines 100 feet apart and about 100 feet in length are drawn on the field. One team lines up behind one goal line, the other in the middle of the field. On the starting signal, the team standing behind the goal line seeks to cross the field to the far goal line within 1 minute, while the team in the center attempts to prevent this from happening by catching and holding the runners. The number of men crossing the



FIGURE 6.—Pull for shore.

far goal without having gone out of bounds is counted. The teams then change places. After each team has had three to five tries, the scores are added and the winner declared. A man scores when any part of his trunk is across the goal line. Teams can be of any equal numbers (fig. 8).

12. Dodgeball.—The game is best played by teams from 12 to 15 on a side in an area approximately 20 by 30 feet. One team goes inside the area and the other team surrounds it. The members of the team outside have a soccer ball or basketball. At the signal they throw the ball at the opponents and play continues until all the inside men have been hit and have left the circle. The time necessary to do this is noted. Then the teams change places. The team wins which hits all the opponents in the shortest time. If the ball stays inside the area, an outside player may go in to retrieve it, but it must be played from outside the lines before any count can be made.

A variation of dodgeball may also be played by setting time periods of 2 minutes. Each time an opponent is hit a score is counted but he remains in the playing area. The team scoring the highest total of hits within its 2-minute period is the winner.

13. Keep Away.—This is a variation of basketball. Ten to fifteen men may play on a team. The object is to make as many completed passes as possible before the ball is intercepted and goes into the other team's possession. In the case of a foul, one point is awarded to the offended team and the ball is also given to that team out of bounds. A point is scored for each completed pass and the team wins which first accumulates 100 points. Basketball rules in general are followed except that there is no attempt to shoot



FIGURE 7.—Tug of war.

goals. There is a referee and two scorekeepers, one for each team. Teams should be distinguished from each other some way.

14. **Mass Soccer.**—Teams are of equal numbers, with 30 to 40 men on a side. Two to four balls are placed in the middle of the field about 10 yards apart. No player may touch the ball with his hands. There should be a referee for each ball. The teams line up on their own goal lines, and on the signal rush forward and attempt to kick the balls across the opposite goal line. Out-of-bound balls on the sides are thrown in by the referee. When a ball crosses the goal line, a point is scored for the team sending it over. The referee then puts the ball into play at mid-field by tossing it in from the sideline. The game is played in two halves of 10 minutes each. Any foul, technical or personal, counts a point for the offended team, and the ball is tossed up where it was committed. There is more action for everyone if partially deflated balls are used or old soccer balls stuffed with cloth or paper.

15. **Swat Tag.**—Twelve to fifteen men form a circle with hands behind back. One player, with "swatter," stands outside the circle carrying a knotted towel or a belt doubled to half length. Swatter moves around the ring until he places the towel or belt in the hands of one of the men and exchanges places with him. This man then becomes the swatter and immediately begins to swat the man to his right who attempts to escape by running around the circle and back to his original place. He may be hit as many times as possible during the course of his run. Blows should be on the back of the hips and legs. The new swatter



FIGURE 8.—Line rush.

then gives the towel or belt to another man in the circle and the procedure is repeated.

16. **Circle Tag.**—Men line up around a circle at equal intervals apart, ready to run in the same direction. At a signal they start to run around the circle, each man trying to tag the one immediately ahead of him. When a man is tagged he is out of the game and should step inside the circle. Play continues until only one untagged man is left. No dodging or running out of line is permitted to avoid being tagged.

17. **Commando Raid.**—This is a rough, vigorous game. A group of about 20 men starts from its goal line to a line approximately 30 yards away where 5 men are waiting. The object is for the larger group to "capture" the smaller group by carrying, dragging, pushing, or pulling them back to the starting line. A record is made of the time necessary to complete the raid. A second group of 5 men then takes the position to defend itself and the raid is repeated. Four raids thus are held, at the end of which the group which has defended itself the longest time is declared the winner.

18. **Clear the Deck.**—The "deck" is a large wrestling mat, a space of approximately 20 by 30 feet, or a circular space of about the same size. All men are seated in this area. The two teams must be easily distinguishable. At a given signal the men go into action by grappling with their opponents either while lying down or after rising to their feet. Any player who is forced to touch the space outside the deck with any part of his body is immediately eliminated and must withdraw. When one team has cleared the deck of all opponents it is declared the winner.

19. **Push Ball.**—This mass game requires a canvas-covered inflated ball 6 feet in diameter. Ten to fifty men may play on a side in a space approxi-



FIGURE 9.—Push ball (start).

mately the size of a football field. Two 10-minute (or shorter) halves constitute the length of the game. Teams change goals at half-time. To start the game the ball is placed in midfield with players of each team a few yards away in their own half of the field. On the starting whistle both teams rush for the ball and attempt to propel it over their opponents' goal line by pushing, rolling, passing, carrying, or using any other means except kicking the ball. Players may use any means of interfering with an opponent's progress except striking and leaving the feet in blocking or tackling. A goal, which counts five, is scored when the ball crosses the opponents' goal line. Following a score the successful team may try for an extra point. In this, the ball is placed 5 yards from the goal line and the two teams are separated by



FIGURE 10.—Push ball (in action).

the width of the ball. Upon signal the ball is put into play for 1 minute and if it crosses the nearer goal line it counts one point for the team which just scored. The game is resumed as originally started at midfield (figs. 9 and 10).

20. Circle Jump.—All players except one form a circle about 20 feet in diameter and face toward the extra man who is in the center. He holds a line about 15 feet long on the end of which is fastened an old basketball or other soft object enclosed in a bag. The rope is swung around the circle close to the ground so the men have to jump it in turn. Failure to jump the rope eliminates the man and the game continues until only one man, the winner, remains. He then swings the rope to start the next game.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

Chapter XII

RELAY EXERCISES AND RACES

Relay exercises and races can frequently be introduced into the training program to add interest, competition, and special types of exercise. They are especially useful for developing skills that are needed in naval service. The exercises can be practiced and later incorporated into (a) races where each man competes singly for himself, or (b) relays where a number of men comprise a team, each man doing the same event in turn.

RELAY EXERCISES

The preliminary relay exercises can be conducted to best advantage in single circle formation with men 8 to 10 feet apart. The double circle should be used when the number of men or limitation in space necessitates it. Instructor stands in the center and calls the exercises and gives the commands. The men begin moving around the circle on command and maintain continuous motion throughout the sequence of exercises at a walking or slow-running pace, according to their physical condition. The explanatory command is given to indicate the next exercise which is not actually started until the command "Begin" is given.

A list of suggested exercises which may be executed in the above manner follows:

1. **All Fours.**—Face downward; on hands and feet, man walks forward on all fours.

2. **Bear Walk.**—Face downward; on hands and

feet, man travels forward by moving right arm and right leg simultaneously, and then left arm and left leg simultaneously.

3. **Elephant Walk.**—Face downward; on hands and feet, with knees and elbows locked, hips elevated, performer walks forward (fig. 1).

4. **Three Point Walk on Left Leg.**—Face downward; on two hands and one foot, performer travels forward, moving both hands, then foot, alternately.

5. **Crawl.**—Lying on stomach; performer crawls forward, keeping body, legs, and arms close to the ground.

6. **Jump.**—From squat position, with hands on deck, and between knees, performer travels forward by leaping forward to hands, bringing up legs to squat position.

7. **Drag.**—Face downward; on hands and feet (back and legs straight), performer walks forward on hands, dragging his feet.

8. **Inverted Crawl (Forward).**—Back down; on hands and feet (with feet forward), performer walks in direction of feet (fig. 2).

9. **Inverted Crawl (Backward).**—Back down; on hands and feet (with hands forward), performer walks in direction of hands (fig. 2).



FIGURE 1.—Elephant walk (circle formation).



FIGURE 2.—Inverted crawl.



FIGURE 3.—Duck waddle (circle formation).

10. **Yardstick.**—Face down; performer supports body on hands and feet, with legs extended backward. Keeping hands in place and knees locked, he walks on toes with short steps until feet are near hands. Then keeping feet in place, he walks forward with hands, taking short steps until the original position is attained.

11. **Duck Waddle.**—Knee-bent position, hands on hips; retaining this position, performer walks forward (fig. 3).

12. **Ankle Walk.**—Knee-bent position; performer grasps ankles (left hand on left ankle, right hand on right ankle). Retaining this position, he walks forward.

13. **Full Squat-Jumps.**—Knee-bent position; retaining this position, performer travels forward by short bouncing jumps.

14. **Toe-Touch Walk.**—Performer walks forward, bending trunk forward and touching one hand to toe of opposite foot on each step. Trunk should be raised to the vertical position between steps.

15. **Back-Lever Walk.**—Clasping hands behind neck, performer walks forward in the following manner: As he brings left leg forward, he raises knee, bends trunk forward and touches right elbow to knee, then steps forward on left foot and raises trunk. Repeats with right leg and left elbow.

16. **Knee-Raise Walk.**—Performer walks forward, raising bent knee of advancing leg as high as possible on each step. Makes every step broad by extending leg forward.

17. **Hand-Kick Walk.**—Performer walks forward, kicking foot upward on every step, at the same time leaning forward and touching toe with hand of opposite arm. Left hand touches right foot, and right hand touches left foot.

18. **Straddle Run.**—Performer runs forward, leaping to right as right foot advances, leaping to the left as left foot advances.

19. **Hobble Hopping on Left Foot.**—Holding right foot in left hand behind buttock, performer

travels forward by hopping on left foot. (Reverse.)

20. **Broad Jumping.**—Performer travels forward by means of a series of broad jumps off both feet.

ORGANIZATION OF RELAYS

Relays fall into four general types: track, double column, file, and shuttle. Of these the latter two are the most practical for mass use.

In the *track* type of relay the players are separated at equal intervals over a course of designated length. The first man, No. 1, runs the required distance and touches No. 2, usually by the transfer of an object such as a baton. No. 2 then continues forward an equal distance and touches No. 3. This type of relay is well known to college and amateur athletics but is not suited to large numbers and so is used but little in mass athletic programs.

The *double column* relay is commonly used in giving athletic instruction. For example, if a certain type of basketball pass is to be taught, the two columns of players line up facing each other. No. 1 can then pass to No. 2; No. 2 in turn passes to No. 3; and so on as the ball travels criss-cross down the two columns to the end of the line.

The *file* relay is probably the most used of all types of relays. The men of each team line up in single file facing in the same direction. The first man in each file runs as specified to a certain mark, and then returns and touches off the second man in the file and so on. The file relay is therefore useful for many events in which it is desired that a man carry out some specified assignment on his forward journey and a different one on the return. This type of relay also is used where certain objects are to be handled or passed along the file.

The *shuttle* type of relay handles large numbers of participants in a small area. One-half of the team is in file formation facing the other half of the team, which is also in file formation, with a specified distance separating them. When the relay starts, No. 1 runs across the intervening distance to touch No. 2. In turn, No. 2 shuttles back across the same distance to touch off No. 3. The team finishes when the last man crosses the opposite line. This style of relay is very popular for running events, including variations with obstacles and handicaps; also for relays in which objects are moved, such as butting a ball with the head or kicking it with the feet.

AIDS IN CONDUCTING RELAYS

A few practical pointers for the conducting of relays are offered.

1. The last man of each team to finish should be distinguishable in some way, such as going shirtless or running to a designated place. Otherwise, in the general confusion with so many players moving about and some teams far ahead of others, it is difficult to pick the winners.

2. To provide plenty of activity for large numbers of men there should be not over 8 or 10 men on a team; thereby each man gets his turn sooner.

3. The distances in the relays should be long enough so that the men get a real workout. If the space is small, this may be accomplished by repeating a shuttle relay several times without interruption.

4. The distances involved in the different relays should be progressively increased as the men improve in physical condition.

5. Care should be taken to see that the men do not leave their starting marks too soon and that the distances are properly covered or assignments correctly performed. A team should not be disqualified when infractions occur; rather a foul should be charged for each infraction, and then the number of fouls added to the team's order of finish. The team with the lowest total wins.

6. A forfeit occasionally imposed on the losers adds to the interest. One idea is to have the winners line up so as to form a lane. The losers are handpaddled as they run the gantlet.

CLASSIFICATION OF RELAYS

Relays, in general, may be classified under one of the following divisions. Suggestions are included rather than complete descriptions.

1. **Relay Exercises.**—The 20 exercises previously explained in this chapter are all suitable as relay races and are best adapted to shuttle or file formations.

2. **Track and Field Relays.**—The ordinary track events can be conducted as relay races. In small spaces the short sprints are usually run as shuttle relays. The jumps usually are included either as obstacle relays or are conducted in accumulative form in which case No. 2 jumps from the mark made by No. 1, No. 3 from the mark made by No. 2 and so on, until the last man has finished.

3. **Obstacle Relays.**—These relays are distinguished from obstacle course running by being improvised and are usually conducted indoors. Short runs are alternated with obstacles such as (1) jumping over hurdles; (2) crawling under a hurdle; (3) straddling two hurdles placed end to end; (4) carrying a heavy object; (5) making a fence vault; or (6) climbing a rope.

4. **Tumbling Relays.**—There are any number of these that can be used, such as forward rolls and cartwheels for a required distance.

5. **First Aid Relays.**—Instruction in the recommended first aid carries can be made more practical by including these events in relay competition. Reference is made to the explanations and illustrations of these carries which conclude this chapter.

6. **Multiple-Man Relays.**—Two or more men form teams and work as one unit in this type of relay. In the two-man events one either carries the other or assists him to make progress. When more than two men are teamed together they usually progress as a unit either abreast or in tandem formation.

7. **Object-Handling Relays.**—In relays of this type part or all of the assignment may be the passing or handling of an object, such as a ball, a stick, from one team member to another.

SELECTED LIST OF RELAYS

Many general suggestions for relay race events have been presented in the section "Classification of Relays" just concluded and the instructor should make such selections as best fit the circumstances at hand. In addition, there are presented a few well-known relays that are generally popular with the men and provide vigorous activity.

1. **Over and Under Relay.**—Men in file formation; first man passes a basketball or medicine ball backward over his head; the second man receives it and reaches down and passes it between his legs. The action is alternated in this manner until the last man is reached. Immediately after a man passes the ball he sits down and leans forward close to the man ahead of him. The last man in line runs to the front with the ball by straddling the file. The men rise to their feet as soon as he has passed over them. The same procedure is repeated until every one has had a turn and the original front man is again at the front of the line.



FIGURE 4.—Tunnel relay.

There are two simple variations of this event; (a) one in which the ball is passed back over the heads of all the men, and (b) where the ball is passed only between the legs.

2. Leap Frog Relay.—There are two methods of conducting this event. In one the rear man in the file leaps over the backs of all the men ahead of him and then runs back to his original position and touches off the man ahead of him. Each man in turn repeats the procedure and returns to his original position. The last man to finish is the front man in the file. In the second method, the rear man begins the race and as soon as he leaps over the man in front of him, the second man starts to leap over the men ahead of him. As soon as a man is the rear man he is eligible to start leaping; thus, several men are in action at the same time. As soon as a man leaps over all the men in the file he immediately drops to a stoop position. The race continues until the original front man is again in front of the file.

3. Zigzag Relay.—The rear man runs in zigzag fashion through the men in the file and returns to his original position to touch off the man ahead of him. Each man in turn repeats this action until he is back in his original position. The original front man is the last to finish.

4. Tunnel Relay.—Men stand straddled in file formation. At the signal the rear man starts to crawl through the legs of the men ahead of him. When he reaches the front of the file he rises to a straddle position. As soon as a man becomes the rear man in the file he starts to crawl, thus several men may be crawling at the same time. The relay ends when the original front man is at the front of the file (fig. 4).

A variation of this relay is to have the men stand side by side in straddle position. Each rear



FIGURE 5.—Wheelbarrow relay.

man crawls from left to right through the legs of the men ahead of him.

5. Inverted Crawl Relay.—This event is commonly called the crab crawl relay. It illustrates the adaptation of a relay exercise to a group relay race. Many variations are possible. A common method is to have the first man in the file, back down, supported on his hands, progress feet foremost a certain distance, and then return with feet trailing. No. 2 in the file then repeats the exercise after No. 1 has returned to the original starting line. Each man moves up to the starting mark as his turn comes. The rear man in the file is the last one to finish. (Fig. 2, page 111.)

6. Butting Relay.—A heavy medicine ball or under-inflated basketball is used. No. 1 butts the ball while on the ground with his head for a designated distance. No. 2 then takes his turn, and so on, until all are through. This relay is suited to either file or shuttle formation.

7. Wheelbarrow Relay.—Men are divided into pairs and line up behind each other facing the starting line. The foremost man walks on his hands, supported around the thighs by the upright man. When the turning mark is reached the men change positions and return to the original starting line. The No. 2 pair then repeats the procedure and so on until all have done it (fig. 5).

A variation of this relay is to have the supported man lean backward into the arms of the upright man. With back stiff he walks forward on his heels.

8. Jump Stick Relay.—Each team uses a wand, broomstick, or belt. The file formation is used. The two front men take the stick, holding it about knee high, and run down the line of men, one on either side. The men jump over the stick as it

passes them. When all of the men have jumped over the stick, the two men carrying it run to the head of the line and lay the stick on the ground, then run to the rear of the line and line up. The two front men at the head of the line take the stick as soon as the others lay it down, and repeat the performance. This is repeated until all the men have carried the stick.

9. Back-to-Back Relay.—Men of a team line up in pairs back-to-back locking elbows. In the paired formation the two men run to a mark a specified distance away. One man will be running forward and the other backward. After reaching this mark the men do not turn around but simply reverse their direction of running. Upon their return to the starting line the procedure is repeated until everyone has run.

A variation of this race is to have three men running abreast with locked elbows. The pilot or middle man runs forward and the two other men face backward and run backward.

10. Horse and Rider Relay.—In this event the rider sits astride (pickaback) the hips of the horse, and holds the horse by the shoulders, not around the neck. The horse holds the rider's thighs. At the signal the pair runs forward to a line about thirty yards away, where the rider

dismounts and the two men interchange positions for the return trip. The other pairs of the same team each continue in turn. A variation of the relay is to have No. 1 carry No. 2 to a finish line about thirty yards distant. Then the rider (No. 2) dismounts and runs back to the starting line to become the horse for No. 3. Each horse thus remains behind the finish line but the rider becomes the horse for the next man in turn.

FIRST AID RELAYS

These events may be conducted as regular races or as relays. In the races the men pair off as described and run to a mark a certain distance away where the pair that finishes first is the winner. In the relays each pair runs to a turning mark with the two men then reversing positions before they return to the original starting line. Successive pairs go through the same procedure until the last pair has finished. In the description of the carries which follows the No. 1 man carries No. 2.

1. Single Shoulder Carry.—No. 1 takes a semisquat position in front of and facing No. 2 who leans forward until he is lying across No. 1's left shoulder. No. 1 puts his arms around



FIGURE 6.—Single shoulder carry.



FIGURE 7.—Fireman's carry.



FIGURE 8.—Fireman's drag.



FIGURE 9.—Double shoulder carry.



FIGURE 10.—Arm carry.



FIGURE 11.—Saddle back carry.

No. 2's legs and holds them next to his own body. He then straightens up and lifts No. 2 from the ground and runs forward (fig. 6).

2. Fireman's Carry.—No. 2 assumes a straddle position and No. 1 places his left arm between No. 2's legs so that his (No. 1's) left shoulder is in No. 2's crotch. No. 2 then leans forward until he is lying across No. 1's shoulders. As No. 1 straightens up he lifts No. 2 off the ground and grasps No. 2's left arm with his own left arm which was placed through No. 2's crotch. He then runs forward. (Directions are reversed if a right arm carry is preferred (fig. 7 and 14).)

3. Fireman's Drag.—No. 2 lies on his back and interlocks his hands behind the neck of No. 1 who straddles him on his hands and knees. No. 1 then raises No. 2's head and shoulders just off the deck or ground and moves forward either in a crawling or crouching position (fig. 8).

4. Double Shoulder Carry.—No. 2 stands directly behind No. 1 and places his arms up and forward so that his armpits are over No. 1's shoulders. No. 1, who has squatted slightly, takes hold of No. 2's arms and raises up and moves forward carrying No. 2 on his back (fig. 9).

5. Arm Carry.—No. 1, who is standing beside No. 2, lifts No. 2 by bending his knees (No. 1's), and placing one arm under No. 2's lower thighs and the other around the middle of his back. No. 2 places his near arm around No. 1's neck. No. 1 runs forward (fig. 10).

6. Saddle Back Carry.—No. 1 partially squats



FIGURE 12.—“Seat” for two-man carry.



FIGURE 13. Two man seat carry.

and bends forward as No. 2 lies across his lower back and hips. No. 1 then puts one arm around No. 2's legs in back of the knees and the other arm around No. 2's back. He then partially straightens up as No. 2 places his arm around No. 1's neck. No. 2 is thus supported by No. 1's arms as he rests on No. 1's hips. No. 1 runs forward in this position (fig. 11).

7. Two-Man Seat Carry.—Three men participate in this event and Nos. 1 and 3 are both carriers who form a “basket” seat, as follows: Each grasps his own right wrist palms down, with left hand; they then grasp each other's free wrist. Leaning over they raise No. 2 on this improvised seat and move forward with him (fig. 12 and 13).



FIGURE 14.—Fireman's carry relay.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

Chapter XIII

ATHLETIC SPORTS

In the administration of the naval athletic program there are two major considerations which must be kept in mind. At naval training stations, schools, and other training activities, athletic games may be required as a part of the regularly scheduled physical training program. When, however, games, sports, and athletics are participated in by naval personnel during leisure time on a voluntary basis, they are to be considered under the category of Recreation and will be conducted under that program. Physical fitness officers and specialists (A) attached to commands are to be available upon request to assist recreation officers in administering the athletic program. Reference is made to Bureau of Naval Personnel Circular Letter No. 54-43 of 13 April 1943, for further clarification.

In this Manual only those sports that can be used extensively in the physical training program are included. Complete explanations of the selected sports are not given, since each of them requires a special rules book. It is also impossible to describe skills and styles of team play of the more highly organized sports, since to do so

completely for each would require a manual in itself. In fact, there are many books written on each of the well-known sports. For these reasons the instructor is referred to the official rules books and to special books on sports for complete playing regulations and for information on coaching. It is assumed at the same time that many of the men will already have had some experience in playing one or more of these sports, so that they will possess sufficient skill to meet the needs of the training program.

Since it is not the purpose here to describe the athletic sports in detail, the following general suggestions are offered for the administration of the sports program as a part of physical training:

1. Occasionally, teach the skills of certain sports to men in calisthenic formation; the movement in the shot put for example, the breast stroke in swimming, the left jab in boxing, the stance and line charge in football, or the movement in the arch shot in basketball, and many others.

2. Use modifications of the well-known sports which lend themselves to mass participation, such as mass soccer, one-court basketball, or touch football, for example.

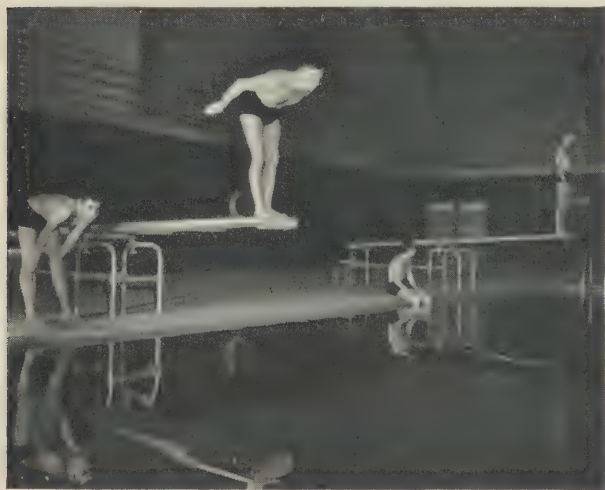


FIGURE 1.—Swimming.

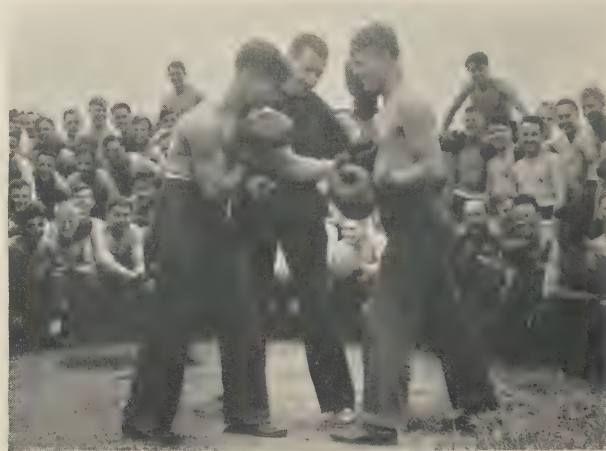


FIGURE 2.—Boxing.



FIGURE 3.—Wrestling.



FIGURE 4.—Football.

3. After the men are in good physical condition, vary the regular exercise routine by introducing games for a short time such as touch football, volleyball, or softball. Because there will not likely be sufficient equipment to go around, alternate groups of men should have the game privilege on different days.

4. Utilize the excellent performers available in each sport as special assistants. This will give needed help and also serve to bring about their enthusiastic support for the whole program.

5. Have rules books available on the different sports.

6. Have occasional showings of sports films. These provide an incentive to participate as well as to strive for improved performances.

7. Build up a library of sports books so that men interested in them may have access to ready references.

8. Have available and display if possible the dimensions of the different athletic courts and fields.

9. Assist in any way possible in the development of a mass athletic sports program in the off-duty time of the men.

A discussion of team and individual sports included in the Navy program of physical conditioning follows. These sports are considered entirely from the standpoint of the body-building and conditioning they afford, although it is recognized at the same time that they have outstanding recreational values.

Following is a brief discussion of selected athletic sports that are included in the Navy Physical

Training Program. In some instances modifications of these sports have been made and are recommended in order to secure the advantages of wider participation by the men.

Swimming.—The importance of swimming is recognized in the Navy Physical Training Program by devoting an entire chapter to it in the Manual. At naval activities where pools are available, or where civilian pools may be used, it is of first consideration to teach swimming as a means of preserving one's life. After realizing that objective, the various phases of swimming can be used as excellent conditioning activities. Reference is made to chapter V for the complete treatise on swimming (fig. 1). (See pp. 25-55.)

Boxing.—As indicated in chapter VIII, boxing is an excellent body conditioner as well as a means of self-defense. It is among the most popular competitive activities in the Navy (see pp. 70-82), (fig. 2).

Wrestling.—This sport and several of its related activities are discussed in chapter IX. Like boxing, swimming, and other competitive sports, wrestling offers many possibilities for body development (see pp. 83-93), (fig. 3).

Football.—Regulation 11-man football, where it can be played, is the outstanding body-contact team game of the country. It is, however, impractical in the general physical conditioning program in the Navy because of the special equipment, space, and coaching that it requires. For large groups of men, however, it may be played in modified form such as touch football, next described. It is suggested that occasional competi-



FIGURE 5.—Touch football (start).

tion be arranged in the fundamentals of football, such as punting, place kicking, drop kicking, and passing, both for distance and accuracy. The men enjoy these special exercise events when competition is added, especially if they are unable to participate in the regulation game itself (fig. 4).

Touch Football.—This modification of regulation football can be played with no special equipment except a ball. Shoulder blocks are permitted but no tackling is allowed nor any blocks



FIGURE 7.—Touch football (in action).

in which the blocker leaves his feet. Tags should be above the waist and either with one or both hands by agreement. Any number of forward passes may be made during a scrimmage. Other than the exceptions noted, the rules of regulation football generally apply (figs. 5 and 7).

Baseball.—The national game, baseball, is an excellent activity for the development of speed, agility, strength, and timing. In the public mind it has become associated with these qualities as well as with quick thinking and alertness. As a sport it is difficult to administer for large numbers of men because of the amount of space needed and the special equipment required. Good physical work-outs are possible, however, for a limited number of men when there is considerable fielding, throwing, hitting, and running practice. For a great many, softball will be a satisfactory substitute for baseball because it includes most of the



FIGURE 6.—Baseball.



FIGURE 8.—Softball.



FIGURE 9.—Track—sprints.

features of the latter game and requires less skill to play it well, and also less space and equipment (fig. 6).

Softball.—This modification of the game of baseball has its own set of official rules. It offers virtually all of the advantages of regulation baseball, as far as the participant is concerned, except that not as great a degree of skill is required to play it. Less player equipment also is necessary. The game is popular and can be made to provide considerable exercise, especially if "slow-pitching" only is used. Another variation in the game is to play it with the pitcher being on the side of the team at bat. In that case his deliveries of the ball to the batter are such as to enable the batter to hit it, rather than to strike him out. This results in much more hitting, fielding, running, and scoring. The pitcher does not field any hit balls (fig. 8).

Track and Field.—This sport has a prominent place in the physical conditioning program. It is well suited to handling large numbers of men. This is particularly true in the speed and endurance events. The sport is easily organized for instruction and offers actual training in such practical needs of naval personnel as quick starts,



FIGURE 11.—Track—high jump.

quick stops, running, timing, hurdling, and jumping, all of which are used extensively by men on board ship. The high jump, pole vault, and weight events lend themselves less readily to the training program because of the equipment necessary and the time involved in conducting them. For most purposes it is satisfactory to select winners in speed events on the basis of the order in which the men finish, rather than on time, since stop watches are not always available. For the distance runs an ordinary wrist watch is fairly adequate. Certain events like obstacle course running should be considered as a part of the track and field program along with the tug of war and various man-carrying races (figs. 9, 10, 11, 12).

Basketball.—This is a universally popular indoor game. In certain sections of the country, however, many outdoor courts are being built for



FIGURE 10.—Track—broad jump.



FIGURE 12.—Track—shot-put.



FIGURE 13.—Basketball.

use in the Navy Physical Training Program. This sport contributes primarily to the endurance and stamina of the men participating. The game also is excellent for the development of timing and speed as well as agility (fig. 13).

Half-court basketball is a modification of the regulation game which allows for doubling the number that may participate at one time in the usual amount of space. Only one basket is used. A team attempts to score in the usual way. When a team retrieves the ball from its opponents it must be passed or taken back beyond a line tangent to the free throw circle and parallel to the end line before it may score a goal.

Goal-Hi is another variation of basketball which is played around a specially constructed single goal 10 feet high without a backboard. A circle 4 feet in diameter is drawn and the goal standard



FIGURE 14.—Volleyball.



FIGURE 15.—Soccer.

placed in the middle of it. No throws for goal may be made from within this circle. Another circle with a $7\frac{1}{2}$ -foot radius from the goal is drawn. The ball is put in play by a jump between opposing players outside the 15-foot circle. The team recovering the ball works it in and attempts to score. If the opponents recover the ball within the 15-foot circle, it must be passed out of this area before they may try for goal. Attempts for goal may be made outside the 15-foot circle. The game may be played with or without out-of-bounds lines. Fouls are shot from the edge of the 15-foot circle.

In general, the other rules of regulation basketball apply to these two modifications.

Volleyball.—This game is a popular one in the physical training program whenever there is opportunity to play it. Little equipment is needed and many men can play on a small court. If necessary, a taut line can be used as a net. The exercise is of a nature to develop posture and there is also considerable jumping, bending, and stretching. There is value, too, in the rotation principle in this game, whereby every player has a chance to play each position and thereby obtain the varying kinds of exercise that go with it. The game can be modified also by use of a medicine ball on board ship. Another modification is giant volleyball wherein a large cage ball is propelled back and forth over the net, with as many players as can be crowded into the two halves of the court. If it is desired to have more than six men play on a side, another successful modification is to have three rows of four men each on a court approximately 40 by 80 feet. "Spiking" may then be done either by the front line or by the second line (fig. 14).

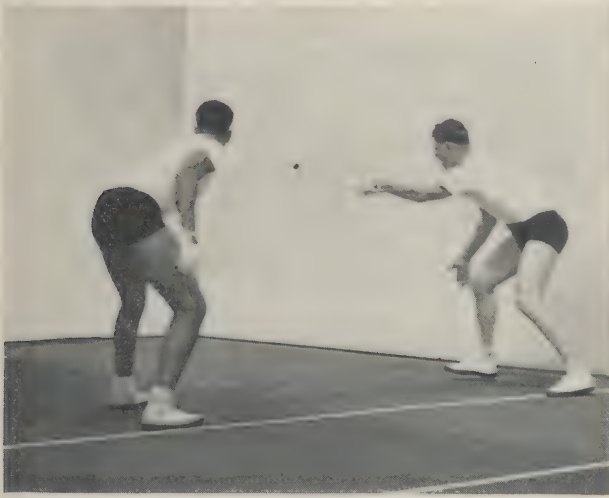


FIGURE 16.—Handball.

Soccer.—This is a standard game, the rules of which may be modified to adapt it to mass use. In general the game is excellent for the conditioning program since it needs only a ball for equipment and since improvised fields and goals can easily be arranged. In addition, the game calls for considerable running and it is therefore good for leg development and general endurance (fig. 15).

For physical training purposes it is usual to dispense with the offside rule. Usually two teams of 11 men use a single field. More men can take part, however, if two fields are laid out crosswise of the football field. In this case there is no goal-keeper. If no posts are available, two piles of clothing may indicate the goal and the referee then is the judge of the height at which the ball passes through the goal. With very large groups of men the game of mass soccer described on page 109 is suggested.

With a smaller number of men, 6-man soccer is recommended instead of the customary 11 men, and a smaller field, approximately 40 by 70 feet, is used. An under-inflated ball is advised in this case as the men cannot then kick the ball so far.

Another modification of soccer, which includes the kicking feature of the latter game, is *speedball*. This game is mainly a combination of soccer and basketball. Aerial play is permitted following a “fly-ball,” i. e., a ball kicked into the air during soccer play. The ball must go into the air directly from a kick and not be a bounce. Such a ball may be played with the hands until it again hits the ground. Then soccer ensues



FIGURE 17.—Boat races—oars.

again until another “fly-ball” permits the use of the hands for catching, passing, punting, or drop-kicking. Scoring in ground play is by a kick through the goal but a score during aerial play is by a forward pass into the end zone. A modification of this game is to use the whole end line as a “goal” and permit a ball kicked from within end-zone territory over the end line to count a score. Another variation is tag speedball in which the player catching a ball is permitted to run with it, with the penalty however of losing possession of it to the opponents out of bounds if he is tagged while carrying it. The game permits much mass participation and impromptu teamwork, and affords much exercise in running, kicking, dodging, and throwing. It is easy to learn because it combines fundamentals of well-known games with which most of the players are already familiar.

Handball.—For alertness, agility, speed, and

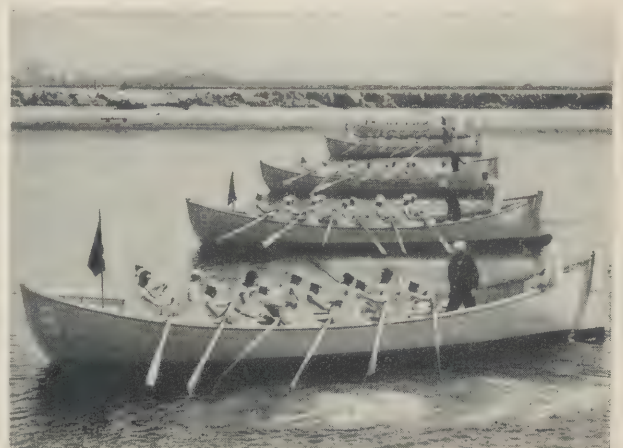


FIGURE 18.—Boat races—start.



FIGURE 19.—Boat races—finish.

endurance probably no individual athletic activity exceeds handball. Its use is limited in the Navy Physical Training Program, however, because of inadequate facilities. The amount of space required per man is too great for general use regardless of its being played as singles or doubles. It is recommended wherever the facilities are available, and especially, if there are only a few men to take part in the training program. The game is exceptionally fast and is an excellent conditioner, and at the same time is an interesting competitive contest. Many of the skills in handball can be included as exercises in the formal physical training program.

Boat Racing.—Use of boats has been a necessary tradition with the Navy since its organization. Keen competition among and between ships'



FIGURE 20.—Penguin races.

crews in boat racing has been of long standing. Its use as a sport also has the practical feature of giving essential training to men of the sea. Aside from the technical instruction involved, boat racing develops strength, endurance, and precision, as well as teamwork and team pride (figs. 17, 18, 19, and 20).

Whaleboat and penguin races are the most common and the former, especially, offers the greatest opportunity for use in the physical training program. There are several variations of rowing strokes that may be used as calisthenic exercises. Running and other endurance activities also can contribute to the general conditioning of men for this sport.

RECOMMENDED FILMS

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

MN-1510. Winning Spirit

Chapter XIV

SUPPLEMENTARY EXERCISES

This chapter contains sections devoted to exercises specifically selected for developing the qualities of strength, endurance, suppleness, balance, agility, speed, alertness, and relaxation. These exercises should supplement the ones used regularly in the physical fitness program. Although their purposes are primarily to develop the physical qualities under which they are listed, yet it is obvious that there is considerable overlapping of their contributions. For example, an exercise mentioned under agility may have considerable value in developing balance. These exercises are singled out for specific purposes so that conscious effort can be made to develop certain aspects of physical fitness and prowess. It must be remembered, too, that in all forms of vigorous games and sports there are constantly recurring situations where these same qualities are trained. Appropriate supplementary exercises should be chosen by the instructor to give needed emphasis to those qualities which he considers are not being developed sufficiently otherwise.

I. EXERCISES FOR STRENGTH AND ENDURANCE

Strength represents the ability of an individual to deliver great muscular effort at any given time. Often it is an explosive type of power. Endurance is the ability to maintain muscular and organic effort for a long period of time.

Practically all exercises and activities in the Navy Physical Fitness Program contribute primarily to these two essential requirements for efficient duty. Since this is the case, no additional special exercises for strength and endurance are being included in this section. Rather, reference is made to the many exercises and activities already explained in this Manual which especially develop these qualities of physical fitness, as follows:

1. Physical Fitness Test which includes squat-

thrusts, sit-ups, push-ups, squat-jumps, and pull-ups.

2. Swimming.

3. Calisthenic exercises.

4. Endurance running, and man-carrying relays.

5. Boxing, wrestling, and other combatives.

6. Tumbling exercises, particularly those in which one man supports the weight of another.

7. Endurance games and sports.

8. Equipment exercises, particularly rope climbing, rope skipping, weight lifting, medicine ball, chest weights, bag punching, rowing machines, parallel and horizontal bars, and rings.

II. EXERCISES FOR SUPPLENESS

Suppleness (flexibility) is a condition that permits a wide range of movement in the joints and elasticity of the body. It is in contrast with stiffness and the condition known as being muscle-bound. Exercises which are particularly desirable for developing suppleness involve stretching, twisting, and bending. These features are prominent in the exercises which follow:

1. **Side Stretcher:** (fig. II-1.)

Starting position.—Feet comfortably spread and hands on hips (fig. 1). **Movement:** Performer leans as far as possible to the right, keep-



FIGURE 2.

FIGURE 1.

FIGURE C.

FIGURE II-1.—Side stretcher.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE II-2.—Lay-out.



FIGURE 2. FIGURE 1.
FIGURE II-3.—Side flex.



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4.
FIGURE II-4.—Hamstring stretcher.



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4.
FIGURE II-5.—Forward bends.

ing left leg straight (fig. 2). He repeats this action to the left side (fig. 3).

2. Lay-Out: (fig. II-2.)

Starting position.—Weight on knees and lower legs, body at attention (fig. 1). **Movement:** Performer leans backward, placing hands on soles of feet for support (fig. 2). He bends elbows and leans as far back as possible and then returns to the original position. After some practice, he tries the complete lay-out (fig. 3). Throughout the exercise it is essential that the hips be "locked" and kept forward at all times.

3. Side Flex: (fig. II-3.)

Starting position.—Head resting on lower arm, toes pointed (fig. 1). **Movement:** Performer raises upper arm and leg vertically with a brisk action (fig. 2).

4. Hamstring Stretcher: (fig. II-4.)

Starting position.—Legs straight (fig. 1). **Movement:** Performer bobs up and down with trunk, trying to touch elbows to the ground (fig. 2). He should slowly widen the stance to the greatest possible limit. **Options:** Performer may grasp one ankle with both hands, putting trunk and shoulders down against thigh and head to lower leg (fig. 3). Or performer may grasp ankles as in figure 1, bend trunk forward, touching head to ground (fig. 4).

5. Forward Bends: (fig. II-5.)

Starting position.—Body erect (fig. 1). **Movement:** Keeping legs straight, performer bends forward with arms outstretched (fig. 2). He bobs trunk up and down, and gradually approaches the ground with hands (fig. 3). **Option:** Performer may grasp ankles with hands, and force trunk against thighs, trying to touch head to knees (fig. 4). The legs must be kept straight throughout the exercise.

6. Rocker: (fig. II-6.)

Starting position.—Feet up, hands reaching backward (fig. 1). **Movement:** Performer grasps



FIGURE 2. FIGURE 1.
FIGURE II-6.—Rocker.

ankles with hands and raises shoulders and knees from the ground (fig. 2). The exercise is completed by rocking forward and backward, with the point of support shifting from chest backward to knees. Head should be held up and back arched throughout the activity.

7. Bridge: (fig. II-7.)

Starting position.—Lying on back, with knees raised. **Movement:** Performer braces top of head, which is extended against the ground or mat, places hands on hips, and raises body up to the position in the figure. He holds this position for 10 to 20 seconds.

8. Roll Back: (fig. II-8.)

Starting position: Lying down, face up, with toes pointed and arms at side (fig. 1). **Movement:** (Arms are kept at sides for support, and legs are straight with toes pointed.) Performer raises feet slowly and rolls back into position shown in figure 2. The weight is on the back of neck and upper shoulders as is illustrated. He then returns to the original position (fig. 1) and repeats the movement several times.

9. Bottoms Up: (fig. II-9.)

Starting position: Attention (fig. 1). **Movement:** Performer takes a full knee bend, places palms of hands flat on the deck (fig. 2). From the knee bend position he extends hips as high as possible, keeping legs straight and hands flat on the deck (fig. 3). He finishes the exercise by returning to the knee-bend position (fig. 2) and comes to the erect position (fig. 1).

10. Pull Stretcher: (fig. II-10.)

Starting position.—Two men sitting facing each other, feet together, legs spread, and wrists locked. **Movement:** With wrists firmly grasped, performer No. 2 tries to bring his trunk as close to the ground as possible as No. 1 pulls him forward. The exercise is continued by performer No. 2 pulling performer No. 1 with the same kind of action as that described above. The legs must be kept spread and straight throughout the exercise.

ADDITIONAL EXERCISES FOR SUPPLENESS

11. High kicking forward.

12. Arm circling: Front, side, and in windmill fashion.

13. Weight supported on one foot, leg circling with free foot (also for balance).

14. With feet spread comfortably, arms at sides, performer twists trunk first to the right and then



FIGURE II-7.—Bridge.



FIGURE 1. FIGURE 2.
FIGURE II-8.—Roll back.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE II-9.—Bottoms up.



FIGURE II-10.—Pull stretcher.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-1.—One-foot balance.

to the left, getting as much twisting action as possible. The arms are used to get a combination "pendulum" and "whip" action.

15. Standing on one foot, performer swings free leg forward and backward as far as possible, then sideward and across as far as possible in front of the body.

III. EXERCISES FOR BALANCE

Balance enables one to maintain body control under varying circumstances. Various activities require different types of balance which are best learned by participation in the activities themselves. It is possible, however, to improve one's sense of balance by practicing certain specific exercises such as those included in this section.

1. One-Foot Balance: (fig. III-1.)

Starting position.—Attention (fig. 1). **Movement:** Performer extends left foot backward, bending trunk forward and extending arms to the side (fig. 2). In final position head should be

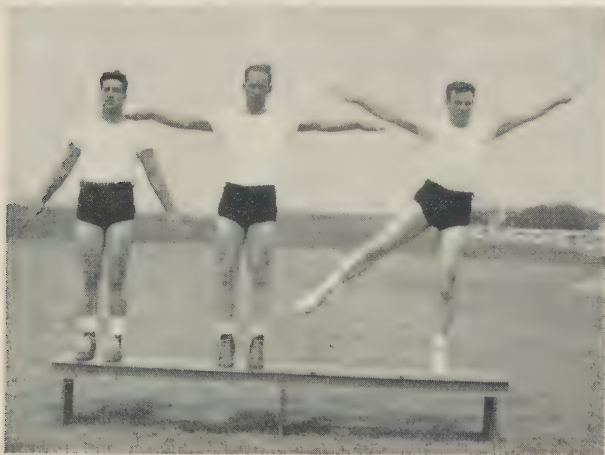


FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-2.—Balance on toes.



FIGURE 1. FIGURE 2.
FIGURE III-3.—Swan lay-out on hands.

up and left toes should be pointed, with supporting leg kept straight. Performer should hold this position for 10 to 20 seconds. The exercise is repeated, with the opposite leg used for support.

2. Balance on Toes: (fig. III-2.)

Starting position.—Standing (fig. 1). **Movement:** Performer rises on toes and extends arms (fig. 2). He completes the exercise by extending right leg to the side, balancing on toes of left foot (fig. 3). He holds the position shown in figure 3 for 10 seconds. The exercise is repeated, with toes of right foot used for balance.

3. Swan Lay-Out on Hands: (fig. III-3.)

Starting position.—Figure 1. **Movement:** Top performer transfers his weight to hands of bottom performer, with the weight borne at the point of balance (usually at the highest level of hips). Top man aids bottom man in balancing by grasping forearms of bottom man (fig. 1). To complete the action, top performer takes the "swan" position (fig. 2). The position in figure 2 is held 10 to 30 seconds. The exercise is repeated, with the position of the two performers reversed. Position of top man may be varied so that he is supported in an "inverted swan lay-out."



FIGURE 1. FIGURE 2.
FIGURE III-4.—Swan lay-out on feet.



FIGURE 1.

FIGURE III-5.—Bird lift.

FIGURE 2.

4. Swan Lay-Out on Feet: (fig. III-4.)

Starting position.—Figure 1. **Movement:** Top performer leans forward slowly, transferring his weight at his point of balance to feet of bottom performer. To complete the exercise, top performer takes the "swan" position (fig. 2). Bottom performer's legs must be kept straight. The position shown in figure 2 should be held for several seconds. The exercise is repeated, with the positions of the two performers reversed. (Also for developing strength.)

5. Bird Lift: (fig. III-5.)

Starting position.—Bottom performer crouched, getting ready to lift top performer (fig. 1). Hands of top performer on shoulders of bottom performer. **Movement:** Top performer springs upward and forward over head of bottom performer, being assisted by the lifting action of bottom performer. Top performer does a lay-out (fig. 2). It should be noted that the weight of top performer is supported on shoulders, head,



FIGURE 1.

FIGURE III-7.—Hand stand with support.

FIGURE 2.

and hands of bottom performer. Performers should repeat the exercise, reversing the positions. Hold positions in figure 2 for 20 to 30 seconds.

6. Frog Stand: (fig. III-6.)

Starting position.—Attention (fig. 1). **Movement:** Performer takes a full knee bend, placing hands on the ground, with fingers spread (fig. 2). He bends elbows slightly and leans forward slowly by raising up on toes, shifting the weight from feet to elbows (fig. 3). He completes the exercise by coming into the balance position (fig. 4). The position shown in figure 4 is held for 10 to 20 seconds. (Also for developing strength.)

7. Hand Stand with Support: (fig. III-7.)

Starting position.—Man doing hand stand has most of his weight on hands. Shoulders are slightly in front of the point of support on hands. Fingers are spread and pointed ahead (fig. 1). **Movement:** First performer kicks up from the position in figure 1 to the position shown in figure



FIGURE 1. FIGURE 2.

FIGURE 3.

FIGURE 4.

FIGURE III-6.—Frog stand.



FIGURE 1.

FIGURE 2.

FIGURE 3.

FIGURE III-8.—Head stand.

2. His balance is secured by the second performer. First performer should attempt to control his own balance by arching his back, pointing



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE III-9.—Sit balance.

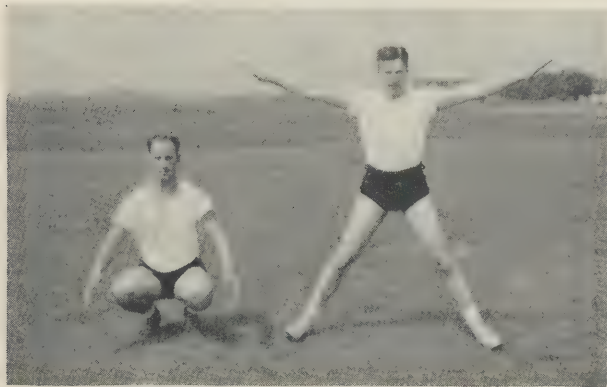


FIGURE 1. FIGURE 2.
FIGURE IV-1.—Spring to heels.



FIGURE 1. FIGURE 2. FIGURE 3. FIGURE 4.
FIGURE IV-2.—Knee spring.



FIGURE 1. FIGURE 2. FIGURE 3.
FIGURE IV-3.—Stick jump.

ing toes, and focusing eyes on an object about 1 foot in front of the line on which hands support his weight. The stand is held for 10 to 30 seconds. After some practice, performer should be able to do the regular hand stand without support.

8. Head Stand: (fig. III-8.)

Starting position.—Hands and head forming a triangular base (fig. 1). **Movement:** Performer raises right foot slowly and pushes off the ground with left foot to position in figure 2. After balance has been established, he takes the final position, with entire body arched and toes pointed (fig. 3). Fingers are spread and pointed straight ahead throughout the exercise. Performer holds the stand 10 to 30 seconds.

9. Sit Balance: (fig. III-9.)

Starting position.—Sitting position, with hands on ankles (fig. 1). **Movement:** Maintaining good balance throughout, performer raises legs upward (fig. 2). If possible, he completes the action by pulling knees in against forehead (fig. 3). The balance position should be held for 10 to 30 seconds.

ADDITIONAL EXERCISES FOR BALANCE

10. Performer walks on balance beam.

11. Performer walks a straight line on toes for some distance.

12. Performer bends and touches left knee to deck while grasping left ankle behind right knee. (Also for developing strength.)

13. With eyes closed, hands on hips, performer places sole of right foot on the inside of left knee. He holds the position for 10 to 20 seconds.

14. From standing position, performer bends forward, placing hands on deck and raising one foot as nearly vertical as possible. He should then lower body weight to the deck, touching forehead, and slowly push up to original position.

15. Performer runs up and down narrow inclined surfaces.

16. Performer climbs up and down diagonal ladders without using hands for support.

17. Tumbling and apparatus exercises.

IV. EXERCISES FOR AGILITY

The agility exercises that follow are designed to train men to be quick, skillful, and to move with ease and balance. Agility also implies an adequate amount of strength as well as flexibility.

1. Spring to Heels: (fig. IV-1.)

Starting position.—Squat position, arms at side, and weight on toes (fig. 1). **Movement:** Performer swings arms upward and sideward, springing from toes to position in figure 2 (the weight is upon heels, toes being pointed upward at a 45-degree angle). Performer holds this position only momentarily and then returns to the original position (fig. 1).

2. Knee Spring: (fig. IV-2.)

Starting position.—Weight on knees, lower leg and top part of feet apart (fig. 1). **Movement:** Performer swings arms backward, and at the same time bends at hips and lowers trunk (fig. 2). From this position he swings arms upward and outward and snaps trunk vigorously upward, bringing knees and feet off the ground (fig. 3). He completes the exercise by landing on feet in the squat position (fig. 4). He then drops down to the original position (fig. 1) and continues to repeat the exercise.

3. Stick Jump: (fig. IV-3.)

Starting position.—Crouching with stick or bat grasped in fingers (fig. 1). **Movement:** Performer bends knees deeply, springs high into the air, extending arms and tucking knees up close against chest (fig. 2). To complete the exercise, performer snaps the stick backward and lands in a crouched position (fig. 3). Performer should then do the exercise in reverse order, starting with the stick behind back (fig. 3) and ending with the stick in the position in figure 1. He should keep the stick low and feet high.

4. Russian Kick Step: (fig. IV-4.)

Starting position.—Full knee bend (fig. 1). **Movement:** Performer snaps arms upward and sideward, and at the same time springs from the full knee bend to the position shown in figure 2, in which he bears his weight on left foot, with right foot extended. He continues the exercise rhythmically, reversing the position of the feet each time. During the exercise, arms follow the movement of body by swinging through wide, sweeping circles. (Also for developing strength.)

5. Stomach Roll: (fig. IV-5.)

Starting position.—Weight on knees, trunk arched, and hands at sides to break the fall (fig. 1). **Movement:** Keeping body arched throughout, performer leans forward slowly and rocks up to the position shown in figure 2. Performer should make the exercise continuous by pushing from position in figure 2 back up to the position



FIGURE 1. FIGURE 2.
FIGURE IV-4.—Russian kick step.



FIGURE 2. FIGURE 1.
FIGURE IV-5.—Stomach roll.



FIGURE 1. FIGURE 2.
FIGURE IV-6.—Leg extension.

in figure 1. When the exercise is executed properly, a definite rhythm will accompany the performance.

6. Leg Extension: (fig. IV-6.)

Starting position.—Legs extended, body fairly erect, and hands on hips (fig. 1). **Movement:** With a lively action performer flexes knees deeply, draws feet back toward buttocks, and touches toes lightly against the deck. He completes the action by extending toes back to the original position immediately following the first

movement. He holds chest and shoulders high throughout the exercise. (Also for developing strength.)

ADDITIONAL EXERCISES FOR THE DEVELOPMENT OF AGILITY

7. From a standing position, performer falls forward to the ground, breaking the fall with hands, bending at elbows.

8. The hop-step-jump and the jump-step-jump.

9. The standing broad jump, the three standing broad jumps, and the standing high jump.

10. Standing in place, performer jumps high into the air and makes a full turn.

11. Performer runs on all fours at high speed.

12. Repeated vertical jumps, jumping as high as possible.

13. Repeated vertical jumps, taking either the tuck or the pike position at the top of the jump.

14. Performer vaults and hurdles obstacles of various types and heights.

15. Tumbling and apparatus activities.

V. EXERCISES FOR SPEED AND ALERTNESS

The exercises next described are in the nature of drills which test the men's speed and reaction time. For this reason they are sometimes called "alert exercises," although the more common term is "grass drills" because of their common use by athletic coaches during early season training. The men move and respond as a unit and are in readiness always to react to a command to go, stop, fall, or rise.

This type of activity is very strenuous. When conducted in the open, with adequate space, the men may do short sprints of from 10 to 20 yards between other activities. When conducted indoors, the running will be stationary, with the knees raised to the height of hips and arms swung vigorously. All movements are done to command or whistle.

1. **Position.**—When this command is given the men assume the position of a football lineman's stance, with one or both hands on the ground.

2. **Go.**—On this command the men charge rapidly forward until they receive the next command. This command always means to go forward in a direction *parallel with the original position*, regardless of the direction in which the group is facing at the moment. Thus, if the group has in the previous run proceeded in a diagonal direc-

tion, the command *Go* causes them to proceed in the *original* direction, not diagonally.

3. **Stop.**—On this command the position described under "Position" above is assumed.

4. **Right (or left).**—On this command the men run diagonally to the right (or left) at an angle of 45 degrees.

5. **To the rear.**—On this command the men reverse their direction and run in the opposite direction.

6. **Right-left.**—On this command the men run to the right at a 45-degree angle. They alternate at each whistle signal. The whistle should be blown about every six or eight steps.

7. **Left-right.**—Counter to "Right-left."

8. **Spread step.**—On this command the men run forward (as in "Go") but with feet separated about 2½ or 3 feet.

9. **Cross step.**—On this command the men run forward, but with the feet crossing over in front of each other, the right foot running to the left and the left foot running to the right at each step.

10. **Zigzag.**—On this command the men run three steps to the right, then three steps to the left, at an angle of 45 degrees from the original direction.

11. **Front.**—On this command the men, whether standing or running, flop quickly to the ground, face downward.

12. **Back.**—On this command the men flop quickly to the ground on their backs. If the command is given to the men in any other position, the men change to the back position, with the head in the opposite direction (except in rolls).

13. **Roll right (or left).**—On this command the men roll to the right (or left) from whatever position they happen to occupy at the moment, making a complete roll.

14. **Squat.**—On this command the men assume a position of full squat, with the hands on the ground just in front of feet. (This command is used out of doors in wet weather instead of "Front" or "Back.")

15. **Sit-up.**—This command is given when the men are on their backs. The men then sit up, with the hands stretching forward.

16. **V-up.**—This command is given when the men are on their backs. The men place their hands on the ground just in front of or just behind hips and raise both trunk and legs verti-

cally to a "V" position and hold it until the next command.

17. **Legs overhead.**—This command is given when the men are on their backs. The men raise their legs and swing them upward and over head until toes touch ground beyond their heads.

18. **Bicycling.**—This command is given when the men are on their backs. The men raise their legs upward, place their hands under their hips, bracing them upward with elbows on the ground, and "pedal" vigorously in the air over head with feet.

19. **Legs up.**—This command is given when the men are on their backs. The men raise their legs to the vertical and place arms sideward on the ground, palms down. It is a preparatory movement for the following command.

20. **Legs right and left.**—When this command is given (it should be given only after the command "Legs up") the men swing legs vigorously to the right and then to the left, alternately, until the next command is given. The movement should be vigorous, the feet nearly touching the ground. Knees are kept straight.

21. **Squat-thrusts, backward.**—This command should be given only when the men are in the position prescribed under "Squat." The legs are thrust vigorously back to the front leaning rest position, and the "squat-thrust" movement (see "Tests," p. 18) is continued until the next command is given.

22. **Squat-thrusts, right and left.**—On this command the squat-thrusts are executed, but with legs extending to the right rear and left rear alternately.

23. **Squat-jumps.**—On this command (usually from the squat position) the men place their hands on top of heads and execute the movement known as squat-jumps (see "Tests," p. 19) until the next command.

In giving instruction in these exercises, too many movements should not be taught at first. One or two new ones may be added every few days. The commands should follow one another in quick succession and may be arranged in such a way as to make a very vigorous work-out. An illustration of commands that might be combined is as follows: "Position—Go—Stop—Right—Front—Back—Roll right—To the rear—Front—Back—Legs up—Bicycle—Go—Front—Back—

V-up—Front—Squat—Squat-thrusts, right and left—Go—Stop—Attention."

VI. EXERCISES FOR RELAXATION

The skillful man, in doing his work uses only the necessary muscles and avoids tensions in all others. When opportunity affords, he is quick to relax. By knowing how to relax he conserves energy, postpones fatigue, and hastens recovery processes.

Training for any task develops muscle control and with it also the ability to relax muscles; but some attention to relaxation is needed for officers and men, both when they are on and off duty.

During working periods, all muscles not directly or indirectly used for the task at hand should be relaxed. Thus, if the task requires holding the standing position, easy swaying and frequent shifting of position are helpful. If the sitting position is required, the legs and feet should be frequently moved or their muscles alternately contracted and relaxed. Occasional shrugging of the shoulders, stretching, wriggling of the arms and neck, and loosening of back tensions will relieve and postpone fatigue. When standing at attention for long periods, men should learn to "wriggle" their toes and imperceptibly to contract and relax muscles of the lower legs and knees. Alternately shifting from the tension position to the outer part of the feet is most helpful in inducing circulation. Also shifting from the heels to the toes can be accomplished without notice or unnecessary swaying. These measures will help to lessen the possibility of men fainting in ranks from lack of sufficient circulation.

Following combat duty or periods of heavy and prolonged work, even though there may be ample opportunity for rest, the men may be too tense to relax, far less able to sleep. The following suggestions may apply in such cases. The men should be urged to practice them whenever opportunity affords.

After the men have been sitting or standing for a long time in a cramped position, vigorous stretching, relaxed jogging, a few limbering knee bends, or loose arm swinging will improve the circulation and aid relaxation. A warm shower or a swim following these mild exercises will be of help.

An effective corrective measure often in counter-

acting tenseness and fatigue is to tighten separate muscle groups in the arms, legs, trunk, and face. When the tension is clearly felt, the men should relax (let go) the muscles suddenly, sensing the contrasting feelings of tension and relaxation. With systematic attention of this kind to the various muscle groups many persons can learn to relax very quickly.

VII. HOT BATHS FOR RELAXATION

One of the speediest and most effective ways to reduce muscular and nervous tension is through the therapy of steam, vapor, and hot baths. This system is most effective when men have been without sleep for long periods of time or are overworked mentally or physically. The therapeutic values of these baths have been known since the dawn of civilization. It appears that recent discoveries tend to show that each important civilization has had its own peculiar type of hydrotherapy. The

early Egyptians had their hot and cold baths. The classic Greeks took great interest in the therapeutic values of hot and steam baths. Many Roman emperors made a great fetish of administering the building of hydrotherapy institutes. The Finns and Eskimos had their own peculiar types of vapor baths, as had the American Indians before the time of Columbus.

It is recommended to the fleet that, wherever possible, rooms be set aside for steam and hot baths. Twenty to thirty minutes in a room of 150°–160° dry heat, followed by 6 to 10 minutes of steam, a cold shower, and an alcohol rub will have a surprisingly beneficial effect in enabling officers and men to endure long watches, sleepless nights, and continuous essential duties. It is further recommended that the commanding officers of all activities become acquainted with the beneficial effects of hot and cold baths and endeavor to effect installations.

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

MN-1138. Physical Fitness Program for the U. S. Navy

Chapter XV

EQUIPMENT EXERCISES

In this chapter consideration is given to a number of supplementary exercises which require the use of gymnasium apparatus and equipment. These all have special body-building values. They can be selected as needed to develop strength, endurance, suppleness, balance, and agility. Moreover, they can be used to provide interesting variations from the more commonly prescribed exercises and activities. They offer the additional advantage of enabling a man to work out alone on special apparatus exercises which will improve his physical condition.

These equipment exercises are classified under the following headings: Apparatus Work; Rope Climbing; Rope Skipping; Weight Lifting; Medicine Ball Throwing; Rowing Machine and Pulley Weight Exercises; and Bag Punching.

APPARATUS WORK

Where apparatus is available it should be used in the physical training program especially during the indoor or winter season. Instruction is more effective if groups working on a piece of apparatus are limited to 6 to 12 men. Since success in performance depends largely upon strength of the muscles of the arms and shoulders, special exercises for their development are recommended. Push-ups, pull-ups, sit-ups, and dipping on the parallel bars are excellent for developing such strength.

The small groups of men working on any piece of apparatus rotate in performing the various stunts. After one exercise is mastered, the next more difficult one should be attempted. Where possible, illustrations and descriptions of various stunts to be performed on the apparatus should be posted. Good form should be emphasized at all times. Particular points of emphasis for good form are legs together, knees straight, toes pointed, and back relatively straight.

Pieces of apparatus occasionally can be introduced as excellent features of obstacle course running. Rope climbing is one example and another is the parallel bars where a man progresses the length by supporting himself thereon, feet down, body between bars, moving forward by placing one hand ahead of the other alternately as in walking, or by short hand jumps.

Following is a list of the various types of apparatus with brief descriptions of procedures for their use. Complete descriptions for performing the various apparatus stunts or exercises are not included because, as in the case of highly



FIGURE 1.—Horizontal bar—giant swing.



FIGURE 2.—Horizontal bar—traveling.

organized team sports, generally there are limitations in the equipment available and the amount of time that can be devoted to them. In programs where apparatus is available and can be used, instructors are advised that detailed description of various exercises for the several pieces of apparatus may be had in supplement form by



FIGURE 3.—Parallel bars—stands.

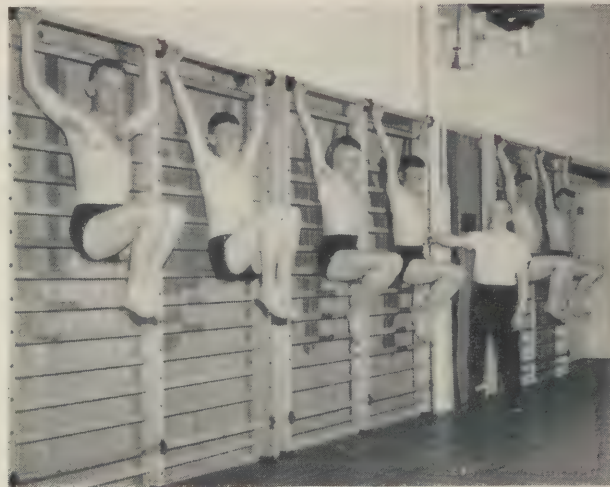


FIGURE 4.—Stall bars.

request directed to the Physical Fitness Section, Training Division, Bureau of Naval Personnel, Washington, D. C.

1. Horizontal Bar.—This piece of apparatus is useful for pull-ups, swings, suspensions, and balances of many types. Many of the exercises commonly done on the high horizontal bar can also be performed on the low horizontal bar which usually is between 4 and 4½ feet from the deck. When working on the horizontal bar, care should be taken to see that the bar is clean. The steel bar is superior to the wooden bar. The bar should be cleaned frequently by rubbing it with emery cloth. (See figs 1 and 2.)

The hands should be rubbed with a cake of magnesium carbonate to dry the perspiration and prevent slipping.

2. Parallel Bars.—The parallel bars are especially useful for exercises developing strength, agility, timing, and balance. Such exercises include mounts and dismounts, travels, seats, twists, rolls, circles, dips, suspensions, vaults, jumps, swings, balances, and hand and arm stands. These movements can be combined into many combination exercises. From the basic moves the performer can go from one stunt to another in continuous movement. Hand stands and upper arm stands should be used as rest positions between other movements rather than as starting positions. Most of the exercises are as easily done on the high bars as on the lower ones. Except for vaulting exercises done from the side, and for vault or leg-circling mounts from the ends, it is well to work from the beginning with the bars



FIGURE 5.—Ladders—vertical and horizontal climbing.

raised to the top height. There are a few movements that cannot be successfully done on the low bars (fig. 3).

3. **Stall Bars.**—Exercises on the stall bars provide stretching, suspending, twisting, bracing, and climbing movements. They are useful in the development of good military posture. In exercises involving lifting up the upper chest, every effort should be made to raise the chest as high as possible, and to straighten the upper back without bending backward in the lower back. In all exercises involving bending the spine backward, the lower back should be kept as straight as possible. This is done by tensing the abdom-



FIGURE 6.—Ladders—vertical and diagonal climbing.



FIGURE 7.—Ladders—horizontal traveling.

inal muscles and thigh flexors. The bending should be done principally in the upper spine (fig. 4).

4. **Ladders.**—Various exercises involving climbing, walking upright and on all fours, balancing, and suspension may be performed on the ladders which may be vertical, diagonal, or horizontal. They provide indoors a substitute for certain features of outdoor obstacle course run-



FIGURE 8.—The side horse.



FIGURE 9.—The long horse.

ning. Exercises on the ladders should receive considerable attention because they aid in developing a kind of strength and agility needed by men in performing their duties on board ship (figs. 5, 6, and 7).

5. The Buck.—In exercises with the buck practice is afforded in runs, leaps, balances, and dismounts. If a beat board is available it should be placed from 2 to 4 feet in front of the buck, depending upon the speed of the run. If a beat board is not available, take-offs will be from deck. In most exercises the take-offs will be from both feet simultaneously. The buck should be low to begin with and gradually raised as skills improve. In alighting, the dismount should be with heels together, trunk erect, and knees bent 90° or more immediately after the feet touch the mat, in order to absorb the shock.

6. Side Horse.—Side horse exercises consist of vaults, straddles, rests, stands, jumps, runs, rolls, scissors, and balances. It is especially important that men know how to do the flank vault because of its use in fence vaulting on obstacle courses. When exercises are done on the side horse with pommels (handles) removed, two or three wide

strips of tape should be placed around the horse to cover the pommel holes. The horse should be relatively low for men who are just beginning this activity. Mats should be placed on the landing side of the horse to prevent injury from faulty landing (fig. 8).

7. Long Horse.—This piece of apparatus affords practice in runs, jumps, vaults, seats, stands, rolls, scissors, and dismounts. The rule for practically all exercises is to take off from both feet. If possible, take-off will be from beat board. The exercises generally are done over the horse from the near end to the far end; that is, with the horse parallel to the direction of the run (fig. 9).

8. Rings.—Development of the ability and strength to suspend one's self is the chief purpose of exercises on the rings. In addition there are pull-ups, swings, flexions, travels, jumps, seats, and rolls. The rings may be used at one of two heights, either 6 or 8 feet from the deck. The lower height makes the learning of many exercises easier. The higher height is more convenient when one is doing the more difficult swinging exercises and is essential for a few of the exercises done without the swing.



FIGURE 10.—Rope climbing—without use of feet.

ROPE CLIMBING

Rope climbing is not only an old-time nautical activity but is excellent for developing the "pulling muscles" of the arms and shoulders. The development of strength and skill in rope climbing may actually mean survival in an emergency at sea (figs. 10 and 11).

Preferably a 1½-inch line is used. The best height is 20 feet. A flat metal plate, white adhesive tape, or other device is used to indicate the 20-foot mark. The contestant starts from a standing position, with hands at ordinary reaching height on the rope. He begins his climb without a jump using any method he pleases. This event may be varied to require the man to carry a pack or to start to climb while in the water. Another variation is to have the men ascend a vertical pole as shown in figure 12.

The men should be taught how to use the feet and legs as well as the arms in going aloft on a line. Some men will simply press the line between their feet, others will cross the feet to obtain their leverage. Where the hand-over-hand method is used, short pulls are advised. Longer pulls may be used when both hands are raised simultaneously on the line following each leg lock. For beginners



FIGURE 11.—Rope climbing—using feet.



FIGURE 12.—Pole climbing.

it is advisable to have knotted lines so that they can test their ability to climb the height and descend without burning their hands or legs by coming down too rapidly. All performers should be cautioned to descend carefully by use of leg locks and firm hand grips.

It is recommended that mats be placed on the deck under the line to protect against injury from possible falls.

Where desired this may be made a competitive event by placing it on a time basis and establishing a few rules for its conduct.

ROPE SKIPPING

This is a very valuable activity for the feet, ankles, and lower legs. It strengthens the smaller muscles and tendons of the feet and ankles and is almost equal to running in developing leg muscle and cardio-respiratory endurance (wind). Speed of foot and coordination of action and breathing are sharpened and increased by this exercise. Skill in rope skipping comes only after lots of practice. But the performer's patience will be

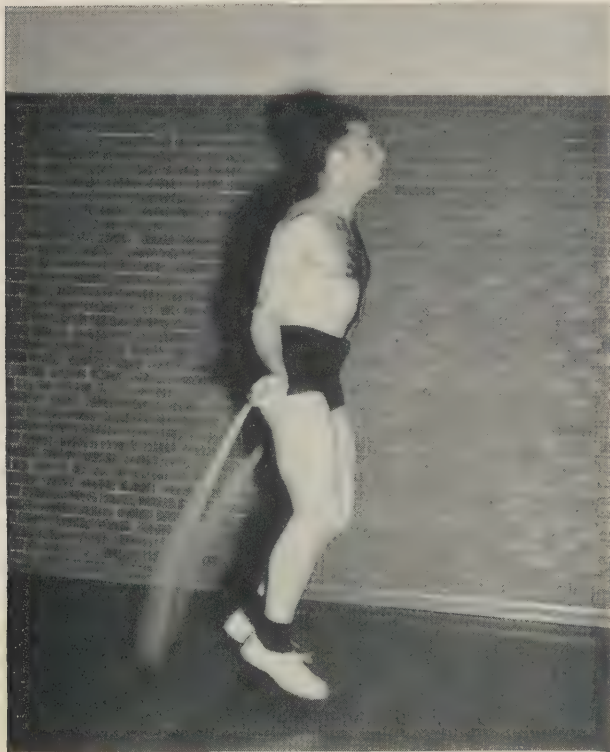


FIGURE 13.—Rope skipping.



FIGURE 14.—Arm curl.

well rewarded by the physical benefits that follow this practice (fig. 13).

The rope should be 9 feet long and of soft cotton braid, $\frac{3}{8}$ inch in diameter.

To teach rope skipping, the instructor should place the men in open-order formation, demonstrate the exercise, explain any important points to be kept in mind, and then let the men practice it. The most common rope-skipping activities are given below:

1. Forward Single Swings of the Rope.—The rope passes forward above head and backward under feet. There is one jump, hop, or running step, etc., to every swing of the rope.

2. Forward Alternate Swings.—In this action there are two movements of the feet to one swing; for example, there are two jumps, hops, or running steps during only one of which the rope passes under the feet.

3. Forward Double Swings.—The man jumps high enough and swings the rope fast enough to have the rope pass under the feet twice during every jump (usually practiced only with jumps).

4. Crossing.—In this type of swing, arms swing the rope in the regular way on one swing, and then arms are crossed in front of chest on the next swing. All alternate swings are made with arms crossed.

The following movements may be executed with the rope-skipping activities just described:

a. Jumps.—Made with both feet.

b. Hops.—Made on one foot.

c. Running step.—Made as in stationary running.

d. Hop-run.—Two hops made successively on each foot.

e. Hop-skip.—One foot hops, and then hops a second time while other foot is swung forward. Forward foot then hops twice while other foot moves backward on the first hop, then forward on the second hop. The exercise is continued in a rocking motion of the body with feet alternated.

In carrying out these activities the rope should be swung mainly with a wrist motion, even when arms are crossed. The jump should be high enough for an easy clearance. As the jumper becomes more expert in his timing and accuracy, he will not need to jump as high as at first.

WEIGHT LIFTING

Muscular strength can be developed very rapidly through progressive weight lifting. The usual equipment is an adjustable bar bell, or several bar bells, graded in weight. For use in the Navy, fixed-weight bar bells are preferable, for they may then be used without delays for adjustment. If regulation bar bells are not available, substitute bar bells may be made by casting concrete on the ends of a pipe. They should be graded in 10-pound units from 40 to 120 pounds. To avoid muscular soreness, weight lifting should not be practiced more than 3 times a week, preferably on alternate days. Weight-lifting practice should begin moderately, using relatively light weights (those that can be lifted 15 or 20 times). Maximum lifting should not be attempted for at least 2 or 3 weeks. After having become accustomed to the activity, men should progress to weights which can be lifted only 3 or 4 times and continue with such weights until they can be lifted 10 or 12 times. Subsequently, they will progress to still heavier weights.

In each of the following exercises the lighter weight suggested is that with which the average man may well start. The heavier weight indicated is one to which he may progress in about 3 months. These weights will differ, of course, for men of different sizes and with different degrees of initial strength. The exercises marked with an asterisk (*) are those which are the most important and which should be emphasized if there is not time for all of them. The men should

repeat every exercise 2 or 3 times with a short rest between them.

1. **Arm Curl.***—The bar bell is held in front of thighs with both hands, palms forward. The elbows are flexed completely, and the bell is lifted to a position in front of stomach. The trunk should not be swayed. The elbows should be extended downward completely on the return

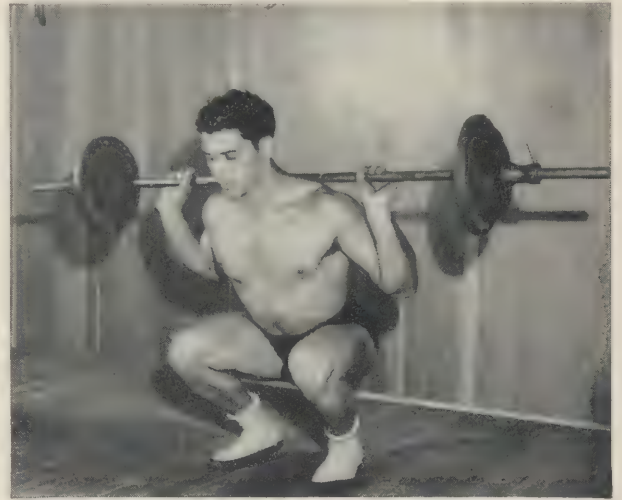


FIGURE 16.—Deep knee bend.



FIGURE 15.—Press on back.



FIGURE 17.—Arm press.

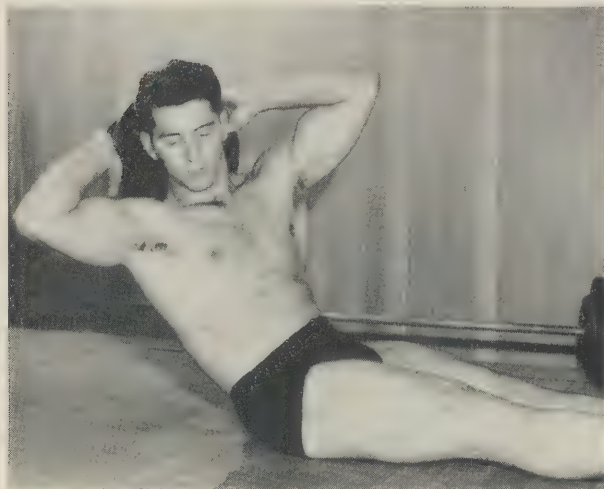


FIGURE 18.—Sit-up.

movement (40–100 pounds; 5–12 repetitions) (fig. 14).

2. **Press on Back.**—The man lies on his back, with bell in hands in front of chest. Hands are shoulder-width apart. Bell is pressed to the vertical and returned (40–100 pounds; 8–10 repetitions) (fig. 15).

3. **Deep Knee Bend.***—The bell is “cleaned” to chest (raised with a rapid jerk without pause);



FIGURE 19.—Two arm snatch.

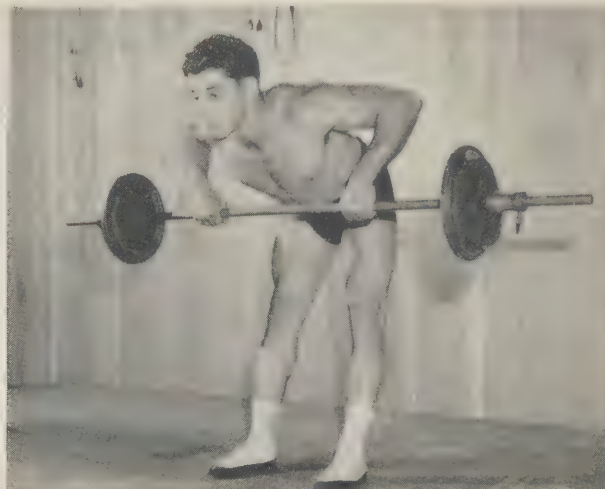


FIGURE 20.—Rowing motion.

then “jerked” over head (and thrust over head with a jump of legs); and then lowered to a rest on backs of shoulders below the base of neck. With feet about hip-width apart, feet and knees turned out and back straight, the man bends knees, keeping heels on deck, and goes down only so far as he can with back flat (60–100 pounds; 10–45 repetitions) (fig. 16).

4. **Arm Press.***—The bell is “cleaned” to chest and then pressed upward to the vertical without the man jumping. The movement should be slow and smooth. The bar is lowered to chest, and the movement repeated (60–100 pounds; 6–10 repetitions) (fig. 17).

5. **Sit-up.***—With feet held down on the deck and somewhat separated, the man holds a weight of from 20 to 40 pounds behind neck and sits up, rotating trunk to right and left, alternately (10–20 repetitions) (fig. 18).

6. **Two-Arm Snatch.***—With bell on deck in front of feet, the man grasps bell with palms to rear (wide grasp). With one smooth, powerful motion, he lifts the weight rapidly upward close to trunk and presses it to the vertical, bending knees and legs and stepping forward as bell is pressed upward and later straightening the legs (50–120 pounds; 8–20 repetitions) (fig. 19).

7. **Rowing Motion.**—The man bends forward and grasps bell as for two-arm snatch. He lifts the bell only with arms, keeping back bent forward (an arm movement exclusively) (40–100 pounds; 10–15 repetitions) (fig. 20).

8. **Other Lifting Activities.**—Practice in lifting sacks of sand or other heavy material, in

shouldering, and in carrying them for distances of from fifty to four hundred yards should be practiced by men whose tasks will involve carrying or lifting heavy weights. The lifting should be to chest, to each shoulder alternately, and to overhead. Lifting and passing heavy dummy shells may be used to develop muscular strength and to teach men skills in handling heavy objects.

MEDICINE BALL THROWING

Medicine balls of various weights can be used; however, the 6- to 10-pound ball is best for throwing activities and those of heavier weights are best for passing and close formation exercises. The 3 following formations are most effective for conducting medicine ball activities: (1) 2 lines facing each other with men from 5 to 20 feet apart, the distance determined by the type of throw or pass to be made. Men side by side should be spaced 4 to 6 feet apart in this formation. The ball is thrown or passed back and forth between the 2 lines of men. (2) Circular formation with men from 2 to 8 feet apart (see fig. 21). For passing exercises, men are in close formation; for throwing activities, men are in extended formation. (3) 2 concentric circles 6 to 10 feet apart.

Group medicine ball exercises should involve not more than 8 or 10 men. The more common throws are listed as follows:

I. STANDING EXERCISES

1. **Chest Push.**—The ball is held in both hands at chest and pushed forward to another man.

2. **Forward Throw from Between Legs.**—The ball is held in both hands in front of waist, swung down between legs, and then hurled forward.

3. **Overhead Forward Throw.**—The ball is held in both hands at waist, swung upward over head, and then hurled forward.

4. **Overhead Sideward Throw.**—The ball is held in both hands at waist, swung sideward and upward to the right, left hand on top of ball, and then thrown forward with both hands.

5. **Sideward Right (or Left) Throw.**—The ball is held in both hands in front of waist, swung to the right side (left hand is on top of ball), and then thrown forward with both hands.

6. **Right (or Left) Hand.**—The ball is held in both hands at waist. The ball is shifted to right hand, swung to the right side, and hurled forward.



FIGURE 21.—Medicine ball exercises

7. **Shot-Put.**—The ball is held in right hand at shoulder, and then “put” as in the shot-put.

8. **Overhead Throw Backward.**—The ball is held in both hands at waist (thrower’s back toward receiver). The ball is swung downward between legs, then hurled backward over head.

II. SITTING EXERCISES

With the exception of No. 2 the exercises described above can be performed in a sitting position. In the case of No. 3, however, the performer rolls backward, bringing ball over head and raising legs. He then rolls forward and releases the ball at the same time.

III. CATCHING

Although exercise with the medicine ball is commonly designated as passing or throwing, considerable attention should also be given to receiving or catching the ball. The activity may be varied in many ways at the catching end. The ball may be thrown at varying speeds so as to be caught at different heights.



FIGURE 22.—Rowing machine exercises.



FIGURE 23.—Pulley weight exercises.

ROWING MACHINE AND PULLEY WEIGHT EXERCISES

These are two common devices for individual work-outs and are found in completely equipped gymnasiums. They are primarily strength-developing machines.

Rowing Machine Exercises.—Any one of several types of stationary rowing machines may be used. The weight of the pull may be controlled by setscrews. The amount of work taken should be determined by the physical condition of the

performer. A record should be kept of the number of strokes taken so that progress in strength may be measured. For speed the exercise should be done against time. Rowing under actual sea-going conditions is still better exercise activity for the development of arm, shoulder, abdomen, back, and leg strength (fig. 22).

Pulley Weight Exercises.—These activities may be used periodically as substitutes for warm-up or other calisthenics. The exercises chosen should emphasize bending, twisting, and stretching. They sometimes are used in athletic training to develop strength in certain muscles used in specific activities, such as the strokes in swimming.

BAG PUNCHING

This is a popular activity with Navy men when the equipment is available because of its relationship to boxing. There are two kinds of punching bags: One is inflated, lively, and short-hitched to a rebounding platform; the other is large, cylindrical, heavily padded, and is suspended from a height of several feet—this is called the training bag. Gloves should be worn when exercising with either bag.

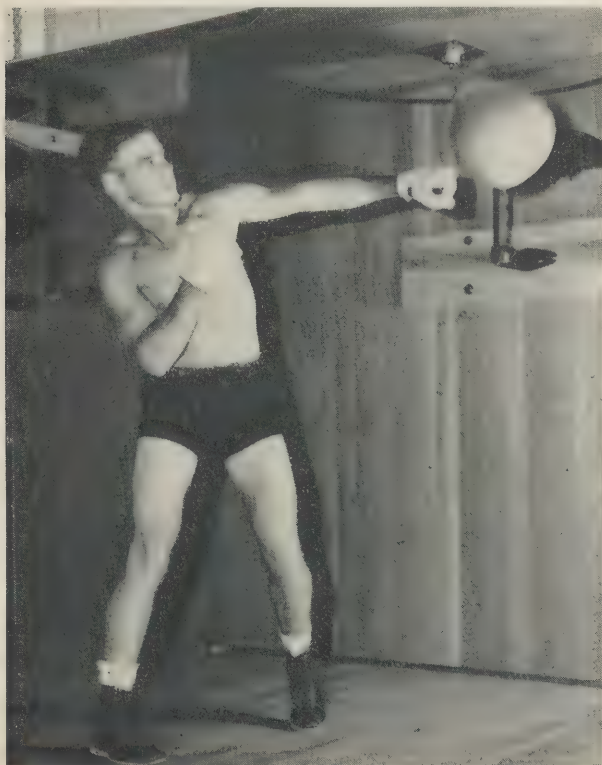


FIGURE 24.—Bag punching.

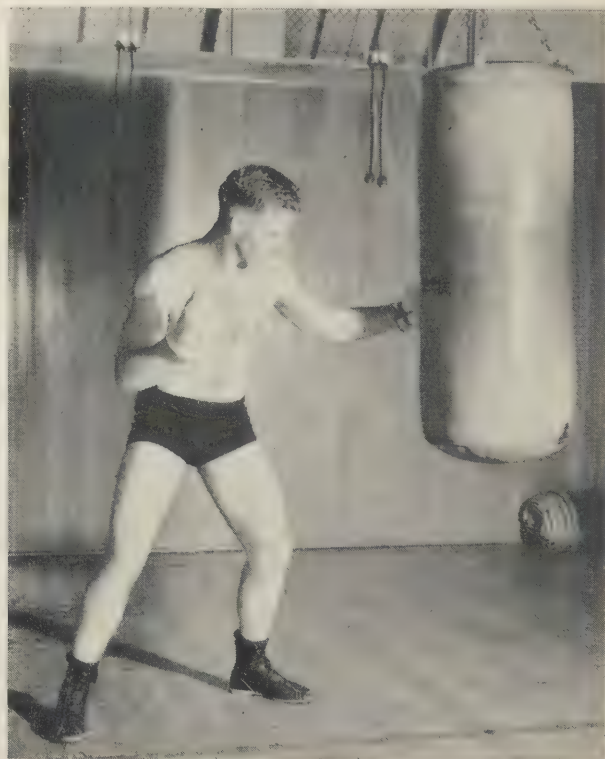


FIGURE 25.—Training bag punching.



FIGURE 26.—Punching bag (group participation).

Many exercises are possible with the rebounding punching bag. In particular, they involve timing and rhythm to the highest degree. The punching bag may be bounced off the fists, elbows, shoulders, or head of the performer for recreation. But to develop timing, hitting muscles, shoulder and arm strength, only the fists are to be used. All professional boxers depend upon the daily workout with the fast punching bag for the conditioning of their hitting muscles. When the skill of punching an inflated bag is developed so that the individual can punch at top speed for three rounds of three minutes each, there is no better training

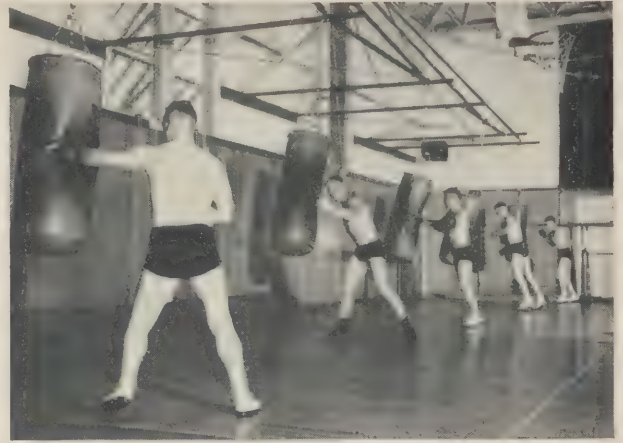


FIGURE 27.—Training bag punching (group participation).

for the development of precise timing, instinctive hitting reactions, and shoulder girdle and arm muscle endurance. It is one of the most essential exercises of the boxer's routine (figs. 24 and 26).

TRAINING BAGS

The second type of bag punching requires considerable force to jar and move the suspended bag. Care must be taken that the wrists are true and firm to avoid sprains and injuries. This exercise is useful for developing short, powerful blows used in "in-fighting" in boxing; also long rights and lefts to body and head can be practiced. This type of bag punching should be accompanied by shifty foot work (figs. 25 and 27).

RECOMMENDED FILM

(Obtainable from commandant (director of training) of each naval district.)

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